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No. 18

RURAL FREE DELIVERY OF MAIL.

MONG the many problems which are before the present congress none are of more interest to the farmer than that of the completion of the system of rural free delivery of mail. problem is chiefly one of dollars and cents, but the cost of rural mail service should not prevent its speedy extension into every rural community. About thirteen thousand carriers are now employed and it is estimated that an additional twenty-five thousand will be required to complete the service. The cost of the whole rural free delivery system is estimated at about twenty-four million dollars, and the postal department figures that this will entail an annual deficit for a few years of from eight to ten millions, or from four to six millions more than last year's. Yet, the superintendent anticipates that within a comparatively short time the resulting increase in mail matter will cover the increased expense and that ultimately it will become a source of revenue. tory and phenomenal success of the experiments with rural delivery during the last few years point to no other conclusion.

The house committee on post-offices of the fifty-third congress condemned the whole scheme as impossible of execution. Postmaster-General William S. Bissell, in his report for 1893, concurred in this opinion, saying that "The department would not be warranted in burdening the people with such a great expense," and in 1894 declined to expend the small appropriation of ten thousand dollars made by congress to test the feasibility of the scheme, stating that "the proposed plan of rural free delivery, if adopted, would result in an additional cost to the people of about twenty million dollars for the first year," and that he did not believe the people were ready to involve themselves in such a large expenditure for the purpose. When congress increased the appropriation for a test to twenty thousand dollars, in 1895, Postmaster-General Wilson adopted the views of his predecessor and declared the plan of establishing rural free delivery as wholly impracticable. The

next year congress made forty thousand dollars available, and in 1896 Postmaster-General Wilson, "with many expressed misgivings," (see report of 1899) put the service to the test. The forty-four routes selected by him in 1896 for the experiment were located in twenty nine states, and the work of experimenting began. In nearly all cases the routes selected presented unfavorable conditions and many of the detailed officers became impressed with the idea that the location assigned them had been chosen to show that rural free delivery was not desired and was impossible of execution. Many of these officers reported against the plan, and yet there were some of the routes which were so well placed and gave such satisfaction to the people that their merits could not be obscured.

Thus the matter stood when, in 1897, Assistant-Postmaster Heath was placed in charge of the problem and given an appropriation of fifty thousand dollars to make further tests. He at once infused new vigor into the experiment and obtained such good results that that year congress appropriated one hundred fifty thousand dollars, and the next year three hundred thousand dollars. Applications for routes began to pour in from all states, and on the first of November, 1899, rural free delivery was in successful operation from three hundred eighty three distributing points, radiating over forty states and one territory. Seventeen routes had been established and tested in Kansas.

From that time on the new branch of the post-office department grew continually, though it was often seriously molested by interested parties, the opposition coming chiefly from two sources: (1) The fourth-class postmasters, who lost or were in danger of losing their positions and some of the trade of the little country stores kept by them, and (2) the publishers of small local papers who feared to lose influence and subscribers because the farmers commenced to read the large metropolitan dailies. Petition upon petition, often signed by the farmers themselves, came to the post-office department stating that the service was not proving satisfactory and should be abolished; but whenever such petitions were placed in the hands of post-office officials for investigation it was almost invariably found that they were originated by the two above-named interested parties.

As the experiments progressed new features were being evolved and added. On April 3, 1899, a rural free delivery ex-

periment was started to test the possibility of putting a post office on wheels and carrying it to the doors of the people. For this purpose a small postal wagon was especially built, handsomely painted in blue and gold and lettered "U. S. Postal Wagon." Its interior was fitted up with counter, drawers, and letter boxes, all included. It carried a driver, and a postal clerk who was authorized to perform the usual duties of a local mail clerk. This traveling post office was started in Carrol county, Md., and proved remarkably successful from every standpoint, even the financial. It cost one thousand three hundred seventy-five dollars per year to operate it and made possible the abolishing of four local postmasters, who had cost the government about one thousand six hundred dollars. Within a few months the department received one hundred thirty-three applications for the establishing of similar postal wagon routes, and the work of establishing these began at once. Many other improvements were put into successful operation during the past two years. Mail carriers were allowed to carry open notes and receive parcels for delivery under certain restrictions. Uniforms were devised and tried, the possibility of hiring girls for carriers was experimented with, mail delivery boxes of different designs were tested, contrivances for heating postal wagons were investigated and tried—in short, the postal department spared no pains for the past three or four years to make a success of a venture which seemed to be an impossible undertaking half a dozen years ago.

Among the many substantial benefits of the new service may be mentioned the increase in the mail from the several country The farmers read more and write more and spend less districts. time in going to and from the nearest town or post office. They are improving the roads along the rural routes and are fixing up and painting their homes along these highways. One Missouri farmer wrote to the post-office department, that during the past fifteen years he had driven twelve thousand miles going to and from the post-office to get his mail, all of which travel was now saved him by the new venture. He stated further, that since he can drop his letters in a box at the fence corner he has written

three times as many letters per week as formerly.

The writer believes that the problem as it will present itself to the convening congress is simply this: Shall the question of expense stand in the way of reaping the immense benefits to be derived from the completion of the system of rural free delivery which is now no longer an experiment? The postal division of the interior department has never before paid expenses. There has usually been a deficit, but the current abuses of the second-class rate privileges have contributed more than anything else to this result. Must the line be drawn tight when the farmer is to be benefited? The fact is, that the new system will be self-sustaining before half a dozen years are passed, and the bolder congress proceeds in the matter the sooner the expected deficit will disappear.

J. D. Walters.

FARMERS' INSTITUTES-THEIR HISTORY AND GROWTH.

RIGIN.—This is obscure, but it doubtless springs from the early farmers' clubs or meetings. Several states claim the honor of first inaugurating farmers' institutes. As a farmers' gathering, from a small informal meeting to a well organized and well-regulated society, has been called an institute, the various claims may possess more or less of truth.

RECORDS OF EARLY MEETINGS.—We have records of the New York Agricultural Society sending representatives to farmers' gatherings as far back as 1842 and 1843. In Massachusetts, farmers' gatherings were held as early as 1859. Short conventions of farmers were held at the Kansas Agricultural College in 1864, and President Denison, of this institution, in his report for 1869, says: "Agricultural institutes are a peculiar feature of this institution." The first well organized and well-advertised farmers' institute held under the auspices of the Faculty of the Kansas State Agricultural College was at Manhattan, from January 2 to 10, 1872, at which time it was reported that farmers came from all parts of the State.

Hon. A. C. Glidden, in an article on farmers' institutes, published in the report of the Michigan board of agriculture for 1892, says that Hon. W. J. Baxter, of Michigan, introduced the following resolution to the executive committee of the Michigan State Agricultural Society, in 1867: "Resolved, That we again recommend to the authorities of the college, a course of lectures on agricultural and kindred subjects, during the winter months, satisfied as we are that they will be largely attended by a class of farmers' sons who are partially released from the labors of the farm at that season of the year." In the same article Mr. Glidden

says that Dr. Manley Miles, of the Michigan Agricultural College, and Mr. W. C. Flagg, one of the trustees of the Illinois University, were instrumental in calling a meeting in Chicago, August, 1871, for the purpose of getting those persons interested in agricultural advancement together for "organizing, consulting and cooperating in the great work of agricultural knowledge and education." The programs rendered at this and succeeding meetings were similar to those presented to our present-day farmers' institutes. From these meetings the interest in institute work seemed to spread. Pres. T. C. Abbot and Dr. R. C. Kedzie, of the Michigan Agricultural College, were ardent advocates of the farmers' institute plan, with the special thought in view of bringing the agricultural college and the farmers of the state in closer touch with each other. At first some opposition was incurred from the board of regents, but as soon as started, the farmers' institute idea met with a hearty response from the farmers.

George T. Fairchild, professor of English at the Michigan Agricultural College, and later President of the Kansas State Agricultural College, in an article published in the Industrialist, January 28, 1888, says: "The institute as a lecture bureau has arisen from many centers." Again he says, "The institute, as a growth from local centers, with permanent organization, began, as I believe, in the winter of 1875–76, in Michigan, under the leadership of Prof. R. C. Kedzie, as chairman of a committee, appointed at his suggestion, for the purpose of bringing the college and the people into closer relations of sympathy."

Prof. L. H. Bailey, in bulletin No. 79 of the office of experiment stations, United States department of agriculture, says that probably the first legal authority for the instruction of farmers not students of the agricultural college is found in a Michigan law passed in 1861, containing the following clause: "The state board of agriculture may institute winter courses of lectures for others than students of the institution, under necessary rules and regulations." The institute work in Iowa and Vermont began about the year 1871.

MEETING EXPENSES.—In the early period of institute work the expenses of the speakers from the agricultural colleges were met from the general funds of the colleges, and those employed by the state boards of agriculture from the regular allowance for the general expenses of the boards. As the work grew, many of the

Bailey, in his report, says that in 1891 \$85,000 was spent in the states and provinces in North America for institute work. In 1899, the amount appropriated for this work was \$140,446 and it is estimated that enough money was taken from general funds, as a supplement to this, to make a total of \$170,000. In Massachusetts, \$600 is appropriated as a bounty to each incorporated agricultural society that conforms to the state law and regulations in regard to such organizations. The amount of money appropriated annually by the different states varies greatly. New York gets \$20,000; Illinois gets \$75 per county, in addition to \$8,000, annually, to the Illinois State Farmers' Institute; Minnesota gets \$13,500; Pennsylvania, \$12,500; Wisconsin, \$12,000; Michigan, \$5,500; Indiana, \$5,000; Iowa, \$50 per county, making \$4,950 for the nintey-nine counties, and Kansas, \$2,000.

GROWTH.—The farmers' institute work has been making a rapid growth. For instance, in Kansas there was a period when only six institutes were held each year. For the fifteen years previous to June 30, 1895, a total of one hundred thirty seven institutes were attended by representatives from the College. During the College year of 1899–'00 there were one hundred thirty-six institutes, or just one less than the total for the fifteen years mentioned. In 1890, Michigan began to range its institutes in series. This plan was rapidly followed by other states.

INFLUENCE AND POWER .-- No doubt, a large amount of our agricultural prosperity and advancement is due to the farmers' institute movement. As testimony, the Agricultural Epitomist says that the farmers' institutes are creating a greater demand for agricultural literature. The institutes and institute workers are becoming a power in the country. The farmers' institute system of Illinois is a good example. This system is a combination of the Iowa and Wisconsin plans. In the former there is no head to the institute work, each county acting independently. As the institutes are not arranged in series, it is difficult and expensive to engage institute speakers from the outside. In the latter itineraries are laid out in advance and if any county wishes to have one or more institutes, it must conform to the dates as mapped out by the head of the state institute department. The program is nearly all rendered by outsiders and very little individuality is developed in the local organization. Illinois has an institute for

nearly every county and each county is responsible for its own organization. The counties combine to form congressional organizations. In addition, they have a state organization which is said to bring together, at each annual meeting, the best men from each county. This enables the farmers to produce an agricultural sentiment which, by concerted action, it is possible for them to crystallize into law. Thus the fruits of a strong local organization and the power of union and coöperation are happily united.

A RISING STANDARD.—The standard of the work being done at farmers' institutes is being raised. There was a time when farmers would pay little attention to "balanced rations." They would look at the speaker in amazement and would ask, "What kind of a chemical compound is that?" Only a few years ago few farmers would give respectful audience to a man who would talk about germs or bacteria. Times are changing. Farmers are becoming more intelligent and are calling for advanced and even scientific instruction along agricultural lines. This is partly due to educating the older farmers, but is more frequently the result of interesting and instructing the young people, who are much more ready to grasp improved methods and even to experiment on their own account.

D. H. Otis.

PROGRAM FOR POULTRY WEEK.

The following is the program for poultry week at the College, February 16 to 21. All interested are invited to be present:

Judging school, conducted by C. H. Rhodes, in the College judging hall,
from 1:30 to 3:30 every afternoon.

Monday afternoon.

Special poultry program, in College chapel
K. S. A. C. Agricultural Association.

Tuesday afternoon.

American breeds
Wednesday afternoon.

Mediterranean breeds
Thursday afternoon.

Miscellaneous, Turkeys, and Ducks
Friday afternoon.

Judging contest for students

Thursday afternoon, at 3:30, in the College chapel, the following program will be given:

	- D 44 Mars
	Hon. A. Kinkead, Burnett, Tex. E. E. Smith, Lincoln, Neb.
	HOIL A. KIIIKOud,
Buff Leghorns	E E Smith Lincoln, Neb.
Dan Logarona	Me
Pekin Ducks	TA Crool Carrollon, Mo.
C'I T I TIT dottes	Mrs. E. A. Clean
Silver Laced Wyandowes	
Dissan Duading	J. M. Jackson, Topeka, Kan. Mrs. Alice McAnulty, Circleville, Tex.
rigeon Breeding	T M Jackson, Topeka, Rall.
Walne of White Dooks	Cinaloville Tex
value of white nocks	Mrs. Alice McAnulty, Circleville, Tex.
T) CC T) 14	Mrs. Alice Molling,
Bull Poultry	

Friday evening, at 7:30, the following program will be given in the College chapel:

Through Pipe-dreams to SuccessGeo. H. Gillies, Topeka, Kan. Editor Poultry Gazette.

Commercial Poultry Representative of Swift & Co., Kansas City, Kan.

Feathers Off (illustrated with dressed birds)...J. H. Herbert, Manhattan, Kan.

Other programs of an extemporaneous nature will be arranged, at convenient times during the week, for those interested.

Two special features have been arranged for during the week. A student contest in poultry judging will be given in connection with the stock judging contest, being arranged for by the K. S. A. C. Agricultural Association. Details for this contest will be announced later. The other feature for the week will be a table poultry test.

POISON FOR PRAIRIE-DOGS AND POCKET-GOPHERS.

(Press Bulletin No. 119, issued from Experiment Station, General Department.)

On January 7, 1902, the Experiment Station announced that we would furnish a prepared liquid poison for the purpose of destroying prairie-dogs. The poison was that adopted and recommended by the Station under the provisions of section 4 of chapter 273 of the Kansas Session Laws of 1901, and it was sent out to all applicants in the State at the cost of the materials used in its preparation. As the poison is patented, it could not be furnished outside of Kansas, for we had purchased only the right to use it in this State. It was supposed that the demand for the poison would cease with the coming of grass in the spring, but it did not, for we have had orders for the poison almost every week since then. While the conditions for poisoning prairie-dogs are best during the winter, this poison has been reasonably successful in the spring and summer months.

Up to this time we have filled more than 500 orders for the poison, aggregating over 4500 half-gallon cans and requiring of strychnine alone over 9000 ounces in its manufacture. Although we had made large contracts for this drug in the fall at the old price of fifty cents per ounce, the heavy orders of the past two weeks have exhausted our supply, and we have been compelled to make new contracts at an advanced price. It is therefore impossible for us to continue to furnish the poison at the old price of \$1.50 per can.

It is thought best to take advantage of the necessity of announcing this advance in price to give some more specific directions than those found upon the can-labels for using the poison and also to include directions for using it in destroying pocket-gophers.

For Prairie-Dogs.—The poison is put up in half-gallon cans with labels, describing the contents, naming the ingredients, the quantity, the manner of preparing, and giving careful directions for its use. The price is \$1.75 per can, delivered at the freight or express office in Manhattan. One

or two cans may be sent by express wrapped in paper, but a larger number must be boxed. Any number of cans may be sent by freight, but they must be boxed. No charge is made for packing. A can of poison weighs five and a half pounds and will poison a bushel of wheat. It should be enough for 1200 burrows.

The strychnine in this poison is not in solution but is held in suspension in the syrup. It settles to the bottom of the can after the manner of lead in in ordinary mixed paint. A common error in using it is to pour off a part of the contents without first having thoroughly shaken or stirred the liquid When thus used this top part of the liquid is not sufficiently poisonous to kill all the animals that eat of the mixed wheat. If it is first stirred or thoroughly shaken, a part of the can may be used as successfully as the whole of it.

We recommend that the area of "dog town" to be poisoned be gone over very carefully, placing the bait at the outside of all occupied burrows as directed. If not all the animals are killed at the first application a change of bait to Kafir-corn, broken corn, or corn meal is recommended for those that remain. If after a second application any animals still remain, carbon bisulphide is probably the most effective means of destroying the remnant.

For Pocket-Gophers.—We have found that this poison is excellent for destroying pocket-gophers, and that it is even more convenient to use than the dry strychnine and potatoes or raisins recommended in Press Bulletin No. 109. The poisoned bait is to be inserted into the run-ways of the gophers in the same manner as described in that bulletin.

The poison for gophers is put up in quart cans, and by leaving out one ingredient (potassium cyanide) the strychnine is kept in solution. The liquid is therefore equally poisonous throughout and any part of the contents of the can may be successfully used. A quart will poison a half bushel of grain, and the price of it is 90 cents per can.

Pour boiling water over a half bushel of shelled corn and let it stand over night to swell and soften the grain. Then drain off all the water possible, and pour the quart of poison and a cup of syrup over the corn. Add a few pounds of corn-meal and mix all thoroughly. The mass of corn should be somewhat sticky, and there should be no dry corn-meal present.

Make openings into the run-ways of the gophers with a pointed stick, and with a spoon drop a few kernels of the corn down each opening. A spade or shovel handle shod with an iron point and having a bar for the foot about sixteen inches from the point is recommended for making the holes into the burrows. No digging or covering of holes is required.



The best time to poison pocket gophers is in the fall or spring, when they are most active. It is not usually necessary to go over the ground with poison a second time, but much will depend on the judgment and care of the operator in putting out the first poison.

Orders for poison for prairie-dogs or gophers should be accompanied by money in payment. Money orders or drafts should be made payable to Miss Lorena E. Clemons, who is Secretary of the College. Method of shipment preferred should also be stated.

D. E. Lantz, Agent.

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LOCAL NOTES.

The Mechanical Department is building a steel crane for the foundry.

Prof. A. B. Brown was in Kansas City last week, conferring with dealers in musical instruments.

The Mechanical Department has received the materials for a steel explosion hood for the Chemical Department.

Mr. and Mrs. R. H. Brown and Miss Anna Hostrup gave a music recital in Wamego Wednesday evening, February 11.

Professor Walters and Miss Agnew are attending a farmers' institute at Arkansas City on Tuesday and Wednesday of this week.

The next number of the society lecture course is "An Evening With a Magician," presented by Karl Germaine, the "Wizard." Germaine is a young man of fine appearance, full of wit and humor, pleasing and refined in all he does. He will be assisted by an attendant and a first class pianist. The number will be given on Tuesday night, February 24.

Manhattan institute held its regular monthly meeting last Tuesday evening. A resolution was passed that the Institute would furnish a site for the Carnegie library. After the business session a short program was given, followed by a pumpkin-pie lunch under the direction of Mrs. Koller. The evening was much enjoyed by those present.—Nationalist.

The following will be the part taken in the dairy program by the sophomores: "Milk as a Condensed Farm Crop," R. E. Williams; "Where the Profit Comes From," H. R. Webster; "The Kansas Dairy Cow as She is, and What She Ought to be," J. Nygard; "Poultry as an Adjunct to the Dairy," Milo Hastings; "Educational Influences in Dairying—Their Need," M. H. Matts.

Messrs. G. W. Price and F. W. Crandall, of Davisville, Cal., members of the California Promotion Committee of San Francisco, gave a free lecture and stereopticon exhibition in chapel last Wednesday evening. The lecture was closely adjusted to their beautiful views of Californian scenery and treated the wonderful resources in the lines of fruit growing, vegetable gardening and farming of that state. Every seat in the auditorium was filled, and all pronounced the entertainment an interesting and highly instructive treat.

The K. S. A. C. basketball team was defeated at Lindsborg on February 6 by a score of 24 to 10, and at McPherson on February 7 by a score of 25 to 11.

C. E. Gray, the chemist of the Continental Creamery Company, at Topeka, will be here next week to do some important analytical work along special lines, for which his private laboratory has not sufficient facilities.

The first monthly meeting of 1903 of the Manhattan Horticultural Society will be held at Horticultural Hall, February 19. The following is the program: "Preparations for the Year's Work in Orchard and Garden," Prof. A. Dickens; "Conditions Necessary for Successful Flower Garden," Wm. Baxter; "Hot-beds and their Products for Home Use," Wm. DeArmond. Everybody is invited.

Mr. E. J. Flowers, of Lincoln, Neb., has been here during the week looking up the whereabouts of his son, who was a student in the College last year. The boy, failing in his examinations, became discouraged and last June he left with a gang of laborers sent out by the Wright Employment Agency. Since then his family has had no trace of him. Through the assistance of President Nichols, Rev. S. J. Carter, Professor McFarland and Mr. Wright the boy has been located in Oklahoma. Mr. Flowers wishes to express his gratitude to these gentlemen and others who so kindly assisted him.

President McDowell, of the Board of Regents, and Professor Otis, of the Department of Animal Husbandry, returned last week from a very successful business trip in Iowa and Missouri. They had visited a large number of thoroughbred herds of Shorthorns and Holsteins and purchased two fine bulls for the College. The first animal, a Holstein, was purchased from W. Barney & Co., at Hampton, Iowa. This bull took first premium in three state fairs last fall and is as nearly a perfect animal as can be found. The second, a Shorthorn, was bought of Warnell & Son, of Liberty, Mo., and is also a leader, having been first at the fair of Sedalia last year, and second at the fairs of DesMoines and Hamlin, and at the Kansas City Fat-stock Show.

Prof. I. N. Merrifield, of Washington, D. C., lectured in the chapel on Tuesday night on "Central America: Its Geography, Population and Resources." He drew a glowing picture of the possibilities of that section of our continent and encouraged the audience to weigh well the advantages of the far south west in case they should desire to look up a location or make investments. He said that the absorption by the people of the United States of the central American republics could be but a question of a short time if we should go down there in increasing numbers. The Pantama canal will aid in the movement, but it can be secured only by a business occupation of the country. The lecture was free and well attended. Prof. H. Brown's military band played a number of selections before the opening.

Many of the State institutions were short on coal this winter and the Agricultural College is no exception. It requires about eighteen tons per day to run the heat-and-power plant, and several times during the present winter there were less than fifteen tons on hand in the evening when the fires were banked. Last Thursday the supply had reached bottom rock when—one's mismisfortune is sometimes another's luck—the Manhattan Mills had a break down. The manager of the mill telephoned that he would let us have a few loads of coal if we would repair his mill. The deal was eagerly accepted by the Mechanical Department and the College camp fire burned on for another day. It prevented a freeze-up in our settlement till another car of the black diamonds arrived from Leavenworth.

During the last two years, the Kansas Agricultural College has lost thirteen of its best and ablest professors, who have gone to other colleges because they got much better salaries than Kansas would pay them. We do things differently here in Iowa. keep all of our good professors, and get the best that the other states have. The result is that the Iowa Agricultural College and Experiment Station stands at the head of the American Agricultural Colleges. This fact was seen at the International Stock Show at Chicago, where the Iowa students took everything in sight in the great contests with the other college boys. It was farther shown at the short course in agriculture and stock judging, just closed, where there were in attendance students from most of the states in the union, and even from old Mexico, who were there to take lessons from the professors in our college. Yes, Iowa may well feel proud of her Agricultural College and the work that is being done there. - Farmer's Tribune.

Several members of the Ways and Means committee of the House, some of them accompanied by their wives, visited College last Friday morning to inquire into our needs. They were piloted by Representative Frank Emmons of Riley county, and were shown about College by President and Mrs. Nichols. It did not take them long to discover that the "College family" is rather numerous for the available space, and they said so in their addresses to the students from the chapel platform. The first speaker, Representative Hunter, of Anderson county, spoke of the great results of public education and especially of practical education. He said that the legislature realized that the Agricultural College was doing its full duty toward the State and that they would do all in their power to keep the institution in a prosperous condition. The second speaker, Representative Goebel of Miami county, said that of all the schools the Kansas State Agricultural College was his ideal and that we could depend on his vote for giving the institution all the financial help it could reasonably ask for. students were highly pleased to hear these encouraging words and responded with enthusiastic cheers. Several Manhattan citizens came up with the visiting party, and the Commercial Club, which has always been loyal to the best interests of the College, paid the expenses of the official visit.

The foundry is equipped for student work in sections, each section to consist of about twelve men. The instruction begins on Monday morning at 8 o'clock and continues without interruption till Saturday noon; but this term every section had to be increased so that at present all have from fifteen to over twenty members. A room of twice the capacity is badly needed.

ALUMNI AND FORMER STUDENTS.

Samuel S. Cobb, class of '89 at the College, has been appointed postmaster at Wagoner, I. T.—Nationalist.

John F. Ross, '02, has accepted a position as teacher of agriculture in the Chilocco Indian School, Chilocco, Okla.—Herald.

G. W. Hicks, second year student in 1902, writes to Professor Walters that he is studying civil engineering in the State University.

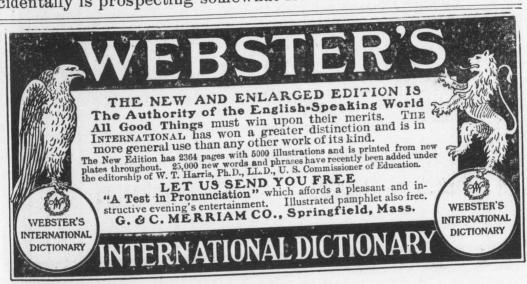
Louise Spohr, '99, who graduated last fall from St. Luke's Training School for Nurses, has been appointed director of nurses in Christ's Hospital, Topeka. Her duties begin March 1.

J. A. Conover, '98, writes that he is getting along well with his work at the Iowa State College, Ames, Iowa, and enjoying it very much. He is specializing in animal husbandry and agronomy.

Geo. V. Johnson, '91, editor of the Sedan *Lance*, visited the College, especially the printing-office, last week, on his return from attendance at the State Editorial Association meeting, at Topeka.

J. A. Scheel, '94, who is in the stock business near Dickinson, N. D., made a visit to the College last week. He found the same numerous changes in buildings, equipment and personnel that strike all students of a few years ago.

F. E. Baxter, second year in 1885, writes that he is in camp in the mountains at Abo Pass, New Mexico. He is in charge of some construction for the Santa Fe Railroad Company, and incidentally is prospecting somewhat for valuable minerals.



KANSAS STATE AGRICULTURAL COLLEGE

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 - 2. Domestic Science.
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- 3. Dairying, one winter term of twelve weeks.
- 4. Agriculture, two winter terms of twelve weeks each.

College Classes are open to both sexes. Tuition is free in all departments. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothing and traveling, are between \$100 and \$200. All College laboratories, shops and classrooms are well supplied with needful apparatus and appliances. A preparatory department is maintained for persons over eighteen who cannot pass the common-school branches.

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THE INDUSTRIALIST.

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No. 19

ENGLAND'S UNCROWNED KING.

The above expression as here applied is no mere rhetorical phrase. It truthfully sets forth a great fact in English politics to-day, one which the English people are, to some extent, just beginning to realize. The so-called constitutional powers of the prime minister of England are mostly a century old. But the practical interpretation of those powers has all during the past century been growing more favorable to an enlargement rather than a diminution of them, until now the English premier is undoubtedly the most powerful executive either in Europe—always excepting Russia—or America. A comparison of the executive powers of the three typical governments of Europe and America might not be unprofitable in this connection, and it is the only way of reaching anything like a correct estimate of the real powers of the actual head of the English government.

Even the most cursory glance at the subject will doubtless convince one that the English executive, that is, the prime minister, possesses elements of power that put it in a class entirely by itself. This is true in spite of the fact that for a considerable distance the powers of all three executives seem to travel the same road together.

For instance, the power of formulating the "administration policy," so far as this can be done through the control of the composition of the cabinet, is one which is shared pretty equally by all three executives alike, though the manner of realizing this control may differ somewhat in all three. In the case of the prime minister of England, once having received his appointment from the crown, at the dictation of the House of Commons, of course, he proceeds to make up his cabinet to suit himself. At least in theory this is what he does. There are no constitutional limits in the way of his making up the cabinet as he chooses. Practically, of course, he must have a cabinet that will possess the confidence and retain the support of a majority in the House of Commons.

But it is the government's policy, and not the men in the cabinet. that most concerns parliament and the country. One thing is certain at the start: whatever the policy of "the government" may be, that policy must be supported by the whole cabinet regardless of each member's individual opinion. Not only must the various members of that body give the policy their tacit support, but they must also be active on every occasion in defending it. How much of that policy in its essentials, and many times in its details, will be the policy of the premier, merely, depends on the strength of the majority in parliament and, in no small degree, on the superior powers of the prime minister himself. With a good majority at his back, such a man as Salisbury, or the late Mr. Gladstone, could unquestionably, if he chose, dominate the whole policy of the government. Those who could not agree with him must get out of the cabinet.

In this respect, however, the powers even of Salisbury, when he stood at the head of the government, were not superior to those of either the German Emperor or the President of the United States. The former unquestionably controls the composition of his cabinet. To that extent he, too, shapes the policy of the government whose real and nominal head he is. As for our President there is no longer any question to-day of his right to control in this manner what is called here the "administration policy." Theoretically, of course, there is a constitutional check on his power of appointment, in that he is bound to secure the Senate's confirmation of certain of his appointments, including the appointment of his cabinet. Practically, however, this means little, as the Senate is not disposed to hamper the President in the choice of his constitutional advisers. But the President's control over his cabinet does not conclude with the appointment. He undoubtedly has the right to control the policy of each department. He may even take charge of the department personally, and in case of emergency this has been done more than once, even in recent times. Or, if a department is not conducted to suit him and he prefers to demand the resignation of the officer in charge, there is no longer any question, scarcely, that he may compel the surrender of the office and proceed to fill it to suit himself.

So far, then, the powers of all three executives seem to correspond in all essentials. But so far we have been looking at the executive only as a thing apart from the other branches of gov-

ernment. But the executive, we know, has its relations to the other two branches of government, and these may greatly promote or hamper its own power. The relations of the executive with the legislature, though perhaps not the most important, are those most often noticed. And here in some respects the contrast between the three governments is very great, every advantage apparently belonging to the English prime minister.

For instance, our executive has no power to prorogue the legislature under any circumstances. The German Emperor may do this under certain express limitations. The English premier may require the crown to prorogue parliament as often and at such times as he may see fit. Just a few days ago Mr. Balfour saw fit to require the prorogation of parliament for some weeks. It may have been done for other purposes, but it certainly is a very convenient way of getting rid of a more or less troublesome and damaging critic while the government is handling a delicate matter like the Venezuelan complication. By the time parliament reassembles the matter will probably be fully adjusted, or else a full sized war will be on hands. In the one case criticism will not avail; in the other, all criticism will be hushed, or mainly so, most Englishmen probably preferring to stand by the government, right or wrong, when menaced by a foreign war.

More important still is the power to dissolve the legislature and call for a new election. This again is a power that in no sense belongs to our executive. The time for election of members of congress is left by the constitution entirely under the control of congress itself, and in no instance can it be shared by the executive. Again, the German Emperor has a limited power in this respect. Until recently it was supposed that the English executive was under at least one constitutional limitation in respect to this power. It was supposed he had no power to require a dissolution of parliament, except on the failure of the House of Commons to sustain some distinctly "government measure." Some three years ago, however, Salisbury called for a dissolution and a new election while the ministry still possessed a clear majority in its favor. It was criticised at the time as unconstitutional, and that by no less an authority than Mr. Bryce. reason for it also was plain. It was a clear case of party politics. The conservatives had gone through the South African war with a small majority in their favor. Owing to the unpopularity of the war itself, as well as the government's method of conducting it, an appeal to the country at almost any time during its progress would have been a dangerous thing. However, when it was all over and the success of England was assured, the party in power enjoyed a temporary popularity that it had not known since the Salisbury ministry had come into power. It was at such a time that the prime minister, for party reasons purely, called for a dissolution of parliament, and thus won for his party an increased majority and so a new lease of life for the government as then organized. If this could be done once, it could be done again. So we may now say, perhaps, that there is absolutely no limit to the exercise of this power on the part of the English executive.

The power to influence the composition of the legislature, of course, means a certain amount of power to control legislation and that, too, often without resorting to a dissolution of parliament. It is an expense to "stand for election." Moreover it is always a question whether one will be "returned" if up for reëlection. These things must be considered when the "whips," representing the cabinet, approach a somewhat independent member of the government party. Defeat of the government measure means that he must incur the expense and the risk involved in a general election. Unless, therefore, he is very much opposed to the measure in question, he will likely obey the command of the party leader and "sustain the government"—that is, work the will of the prime minister.

A still greater contrast appears when we consider the more direct powers of the three executives in preparing the laws they are to enforce. In the United States the President has the right, as it is his duty, to inform Congress of "the state of the union, and recommend to their consideration such measures as he shall judge necessary and expedient." How much influence his recommendation may have upon legislation depends on many things. But at most it amounts to nothing more than influence. He has no means of compelling Congress to heed his suggestions. The German Emperor is no better off, except as to the introduction of measures into the federal council or upper house. But in England practically the cabinet—that is, again, practically, in this instance, the prime minister—has the sole right to initiate legislation. It is true any member may get permission of the house to introduce a bill, but practically no bill on any important question

has any chance of becoming a law that has not been formulated by the cabinet, presented by the government and supported by all the forces at the command of the administration in both houses.

We have scarcely space left to consider in detail, at this time, the executive's relation with the other branch of government, the judiciary. But this may be briefly characterized in the following manner. In this country we look upon the judiciary as a "coordinate branch" of government-coördinate with the legislature and executive. It results from this that no legislation is certain to stand until it has secured the approval of all three branches. That is, a bill that has passed the national legislature and secured the approval of the President may yet fail when it reaches the courts, being declared unconstitutional. In Germany, however, no such power is recognized as belonging to the judiciary. may be doubtful to whom the power to declare laws unconstitutional does belong, but it is certain that it does not belong to the courts. In England it just as certainly does not rest with the courts to set laws aside as unconstitutional. But, further, it is quite as certain that there is no power outside of parliament itself to question the constitutionality of an act. In the well-worn phrase, parliament may do anything in England but make a man a woman. The only reason it can't do this, is because it is a physical impossibility; it certainly would not be "unconstitutional" if possible.

Remembering, then, the power of the prime minister of England to influence the composition of the legislature and thus to influence legislation, his power to influence parliament by a mere threat of "an appeal to the country," remembering also that every important legislative enactment, as well as every administrative measure, originates with and is directed by the cabinet, which in its turn must always in all essentials be under the direction of the prime minister, finally remembering that back of this cabinet, or what amounts to the same thing, the prime minister, there is no written constitution distinctly defining the powers of the executive, nor any court with power to check unconstitutional acts on the part of the executive. Remembering all these things, we shall certainly find no difficulty in concluding that we have here one of the most perfect examples in all history of "one man power" that was ever developed and that, seemingly, in the very midst of all the essential elements of democracy. What is to come of this experiment in government—for that is what it is—no man can possibly foretell. Already it is charged that parliament has become nothing more than a body for registering and giving legal form to the decisions of the cabinet, under the leadership of its prime minister. This is doubtless putting it too strong, but no one can deny the tendency in this direction. If this tendency is held in check by some new force that has not yet made its appearance, the large concentration of the powers of government practically in the hands of one man, and that a man not chosen by the people and only indirectly responsible to them, may finally prove a good thing.

But just at present it is doubtful, to put it mildly, whether there is after all much justification for the overconfidence of the English people in the final triumph of the so-called parliamentary system over every other known system of government. often criticised by Englishmen for granting such large powers to the mayors of our large cities. But the mayor of the largest city in this country has but an insignificant portion of the people of the United States under his control, while his power to affect the interests of this limited number is as nothing compared with the power of the English prime minister to affect the interests and shape the destinies of a whole race. Our mayors must at least look to some formal enactment of the legislature for what powers they have. They must discover those powers somewhere in the city's charter, either expressed or necessarily implied. charter itself must be found in accord with two other written documents, the state and federal constitutions, the construction of which is left to two independent systems of courts. all this we still have the real elements of despotism in the powers granted to some of our city mayors, what language will properly characterize the power of England's "uncrowned king"—the real, though not the nominal head of her great empire?

C. E. GOODELL.

The McIntosh Shorthorn sale, Monday, considering the stormy weather and the large number to be disposed of, was a good one. Mr. McIntosh is well pleased with the sale and the splendid treatment he received by the management of the new sales arena. The total sales amounted to \$5,655, the highest price paid for an individual was \$210 and the average was \$114.50.

SCRATCHES OR GREASE-HEEL IN HORSES.

FROM now until the ground becomes dry and settled in the spring is the worst season of the year, so far as scratches in horses is concerned, wet weather, muddy yards and roads being among the active causes of the disease.

Scratches, commonly called "grease-heel" in horses, is an inflammation of the glands of the skin in the region of the heel, or in the hollow below the fetlock joints. The inflammation may extend up the back of the legs, especially in the long hair of the fetlock. It is possible that the real cause is a germ or fungus that attacks the glands of the skin.

Scratches usually attack the hind legs, probably because the hind feet are contaminated by standing in manure and urine. One of the first symptoms noticed is that the animal steps about uneasily, and often tries to scratch one leg against the other, indicating that the inflamed skin itches and smarts. The hair of the affected part becomes erect and a gummy or greasy exudate appears like dew on the hairs, hence the name "grease-heel." Transverse cracks soon appear in the skin that are very sore, especially when the horse is first exercised after standing over night. The horse is often quite lame and stiff when first led out, as exercise causes pain as the cracks open and close. The legs usually swell above the fetlocks and pasterns. There is often a discharge of gummy pus (matter) from these cracks, and in severe cases proud flesh forms.

Cleanliness is the first essential in treatment. The stall should be kept clean and dry. If the hair in the affected region is long, it should be clipped off closely. When the inflammation is severe and the parts covered with scabs, a linseed meal or bran poultice should be applied over night, the parts washed clean with warm soapsuds, wiped dry, and soothing, healing remedies applied. White lotion made by dissolving an ounce of sugar of lead and six drachms of zinc sulphate in a quart of water is excellent. Shake the lotion before using. After applying the lotion, put on some clean oil or vaseline. Castor oil is good. A solution of one part of pure carbolic acid in twenty-five parts of raw linseed oil or cottonseed oil is very good, as is any healing ointment. proud flesh has formed it can be destroyed by using a little lunar caustic, then treat as described. Before taking a horse out into mud or wet, grease the parts well, and when he comes in wipe clean and dry and oil or grease the parts. Be sure to keep them N. S. MAYO. clean and dry.

BETTER BRED GRAIN AND CORN FOR KANSAS.

(Press Bulletin No. 120, issued by the Agricultural Department of the Experiment Station,

There are a few simple rules, if they are observed, by which any farmer may improve the quality and productiveness of his corn and other grains.

The vitality of seed depends largely upon three factors, viz., the maturity of the seed, that is its perfect development; the vigor and healthiness of the parent plant, and the saving and storing of the seed.

Seed corn should be selected in the field, so as to observe the stalk as well as the ear. Select the best ears (those which hang down indicate weight and small shank) from strong, healthy, leafy stalks. Gather two or three times as much corn as you need for seed, and after shucking, select only those ears which are sound and true to type, well dented, with deep wedge-shaped kernels and straight rows, well filled out at butts and tips. Thoroughly dry the corn in a well-ventilated room, supplying artificial heat when necessary, and store in a dry place away from rats and mice.

So important is it to save seed only from the strongest and most productive plants that every farmer ought to select the field in which to grow crops for seed. Give the land special preparation, plant at the most favorable time in order to secure quick and sure germination, and give the crop the best possible care and cultivation, so as to get the fullest development of the plants.

Sow the grain or plant the corn thinner than you do for the general crop, n order that the plants may be vigorous and fully developed in productiveness. Seed from large productive plants is more apt to produce large productive plants than seeds from stunted, crowded plants.

Allow grain to become fully ripe before harvesting for seed, keep it from getting wet in the shock if possible, and thrash it only when it is thoroughly dry, so that there will be no danger of heating in the bin. Store in a dry place. Always clean your seed grain, removing all foul seed and light kernels. Like produces like with the plant as with the animal. If you want to produce heavy, plump grain, plant heavy, plump grain.

The Agricultural Department of the Experiment Station will begin a series of experiments in 1903 for the purpose of testing and comparing all kinds of grain and corn which are being grown or recommended for planting in Kansas. These trials will be made at this Station and duplicated, as far as possible, at the Fort Hays Branch. I wish to secure seed of all the best varieties of grain and corn, which are now being grown by the farmers of Kansas. If you have a good strain of corn, wheat, oats, barley, flax, Kafir-corn, sorghum, etc., which you would like tested in this trial, send a sample of seed to the Agricultural Department of the Experiment Station, Manhattan.

For all varieties which it is desirable to grow here and at the Branch Station, one bushel of grain and one peck of corn will be required. For a single trial, one-half bushel of grain and one-half peck of corn is sufficient. I prefer to have the corn not shelled, but in the ear, in order to compare varieties and make some selections for breeding purposes.

The results of the variety trials will be published, and it is the purpose, if certain varieties are found to be better adapted to the State or to parts of the State than others, to propagate and improve them and ultimately to distribute to the farmers of the State better varieties of grain and corn than those grown at present.

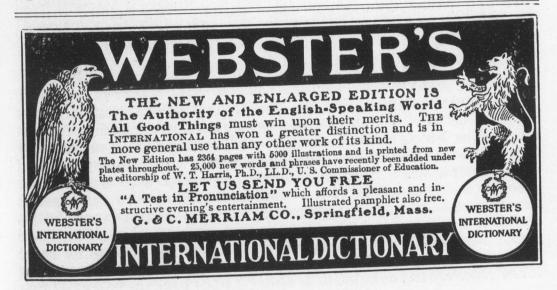
I believe that the surest and quickest way to get improved varieties of grain and corn for Kansas is to begin with the best native varieties-those sorts which have been planted and grown in this State for a long time, until they are thoroughly adapted to the soil and climate. These varieties have the stamina to withstand adverse conditions; all they need, perhaps, is a few years of careful and scientific breeding and selecting to improve them and make them superior to the best we can get from other states. Some who have planted the high-bred corn from Illinois have reported that the crop from the Illinois seed was much inferior to that from their own Kansasgrown seed. It does not follow from this that we should discontinue the testing of varieties from other states or climates, but the suggestion is that such trials should be made on a small scale at first, and if a variety prove to be hardy and adapted to Kansas conditions, then begin planting it in a Meanwhile let us breed up the best Kansas stock.

I earnestly invite the farmers, and especially the grain and corn breeders and seed growers, to cooperate with the Experiment Station in this work.

A. M. TEN EYCK.

The Alumni of the College living at Kansas City are planning to form a local organization and have a banquet at the Midland Hotel on the evening of March 21. Professor Walters and Doctor Mayo have been asked to address them on that occasion.

The legislature has been wrestling with the College appropriation bill for several weeks, but the end is not yet. It seems that we may expect the whole amount asked for buildings, less the new Horticultural Hall. In some cases the committees have made additions or increases to the various items; in a few the amounts We hope to be able to report a comasked for are decreased. pleted appropriation by next week. President Nichols, supported by Senator McKnight, of Geary county, Representative Emmons, of Riley county, Regents Stewart and Brock, and many other warm friends of the College, are doing heroic work for the institution, and there will be no letting up until the bill is passed and signed.



THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

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PRES. E. R.	NICHOLS Editor-in-Chief
PROF. J. D.	WALTERS Local Editor
PROF. J. T.	WILLARD Alumni Editor

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LOCAL NOTES.

The Chemical Department has received a number of new wall charts of the groups of elements, for the different lecture rooms.

The horticulture girls have used so much of the greenhouse stock for propagation work that the crop of flowers is getting scanty. The department has many calls for cut flowers which it is unable to fill. Florists from many points report a good trade and no surplus.

The new "College speller," a collection of scientific words used in the different departments of the College, is now in the hands of the printer. The speller was compiled by Professor Brink at the request of the Faculty, and is expected to prove a welcome reference for the students.

The Hort. Department has at present six letters asking for horticulturalists, some of which are very good offers; but there is no one to recommend. If some aimless College chap would get down and work, he might find the world had a place for him along that line.—Students' Herald.

The Department of Domestic Science conducted a poultry cooking test in connection with the poultry institute last Friday. Six kinds of fowls entered in the contest. They were weighed before and after cooking. A number of invited guests were given a piece of dark meat and light meat from each fowl and were asked to write their individual judgment of the color, quality of fibre and flavor upon given score cards. The results proved that each breed has a particular flavor. The cards have not been tabulated as yet, and as the fowls were not raised under equal or even similar conditions, the conclusions are of course not really decisive.

The seniors entertained the juniors in Kedzie Hall, Monday night, February 16. It was the regular annual reception, and an occasion at which the members of the two classes always enjoy themselves. The rooms were decorated with the senior and junior colors, and a profusion of red and white hearts and other decorations emblematic of a "valentine" affair were very much in evidence. A short program was given. Miss Alberta Voiles played a piano solo and Miss Stella Fearon sang a beautiful vocal solo. The toasts were given by Frank Boyd for the seniors and Mr. Shmitz responded for the juniors. Light refreshments were served during the evening.

When coming up from Arkansas City to Mulvane last week the local editor found himself in the same seat with ex-regent E. D. Stratford, of Eldorado, who was on his trip home from the Indian Territory. He told us that he had been, for the past four years, a special agent of the interior department, Washington, D. C., locating reservations for various purposes. He had been for some time in Alaska in close intercommunication with Prof. C. C. Georgeson, formerly of this College. At present he is located at Guthrie, Ok., and is looking after the reservations of several of the Indian tribes. Hon. Stratford looks bright and hardy, and remembers the Agricultural College as warmly as ever.

J. G. Haney, superintendent of the Fort Hays branch of the Agricultural College Experiment Station, has received from Prof. F. C. Curtis, dean of the Iowa Agricultural College, the following telegram: "Can you come to Ames Wednesday; good position open. Important. Wire answer." Mr. Haney answered that he was well pleased with present position and that legislation looked favorable for the branch station. The friends of the College fervently hope that it will be favorable. Superintendent Haney is too good a man to lose—too good a man to follow the thirty or forty other college employees who left the institution the past three or four years because other places offered larger salaries and more free time for self-improvement or experiment.

The State Dairy Association will hold its annual session at the Agricultural College from March 3 to 6, inclusive. It will probably be the largest and most enthusiastic meeting ever held by the dairymen. The sessions will be held in the College chapel and the headquarters will be established in the Dewey dormitories at the southeast corner of the city park. Furnished rooms may be obtained in these buildings at from \$1.00 to \$1.50 per day. The rooms are new, well lighted by electricity and heated by steam, and of easy approach. Board can be had at all student boarding houses at very low figures. The railroads have granted a rate of one and one-third fare for the round trip. In short, everything has been done or will be done to make the session a great success and a pleasure to all who will attend it.

Sec. T. A. Borman, of the State Dairy Association, writes from Topeka, February 18: "We have secured a reduction to one and one-third fare, on the certificate plan, for all parties attending the State Dairy Association or visiting the College the week of March 2 to 7, inclusive. The rates are from February 27 to and including March 9. We trust that you will advise all of your students that they may call the attention of their parents to these reduced rates with the hope that many parents will avail themselves of this opportunity to visit the College and at the same time assist the State Dairy Association in securing the necessary certificates to secure this one and one-third fare. Can you not take this matter up with your dairy boys and have them endeavor to secure two or three of their friends in attendance at this meeting?"

In order to accommodate the students of the different courses who are not regularly assigned to stock judging this term, the Faculty has arranged for a Monday afternoon class. This class will do the same work and cover the same ground that is being covered by the regular classes, and is expected to be attended by a large number of the best farmers of the College.

Our fears of a coal famine have at last been realized. Last week we told how we had to dicker with the Manhattan mills to get a carload of coal in exchange for some shopwork. This week we could not bargain with anybody. The promised coal did not arrive, and on Thursday morning the assembled students had to be told that there could be no classes during the first two morning hours. A car load of coal had arrived in the night, but its late arrival and the very poor roads made it impossible to have the rooms warm by eight o'clock. It requires about fifteen tons of coal per day to keep the heating plant in fuel and over two hours of firing before the class rooms are habitable. The railroads say they will never be bad again.

Last Friday morning President Nichols announced from the chapel platform the sad news that on Thursday evening, at about eight o'clock, P. D. Schmidt, a preparatory student, had lost his life by drowning in the Blue river, where he had gone with a number of students to skate. Student Schmidt came here in September, from his home at Inman, McPherson county, to fit himself for greater usefulness on his parental farm. He was twenty-two years old and a hard working, well-behaving young man, and his sudden death was quite a shock to his many friends. At the time of the president's announcement the body of the unfortunate one had not been recovered, as Schmidt had drifted under the ice when he broke through. A large number of his College mates helped on Friday to search for it, and found it only a short distance from the place of the fatal accident.

ALUMNI AND FORMER STUDENTS.

While on an institute trip last week, Professor Dickens incidentally met several former students. E. F. Kistler, student in 1890, now a prosperous Brown county farmer, reports a yield of fifty-seven bushels of corn per acre for an eighty-acre field in 1902, and an average for the three years 1900-1-2 of forty-two bushels. E. A. Eggleston, third year in 1896-7, now a contractor and builder in Columbus, Kan., has a nice home, wife and three months old Clyde Davidson, sophomore last year, is "keeping school," with ninety-three pupils under his supervision. He has the promise of another room and teacher next year. Between trains on the return trip Professor Dickens enjoyed the hospitality of C. V. Holsinger, '95, and Olive Wilson-Holsinger, '95, at their beautiful new home just west of Rosedale. C. D. Adams, '95, and wife were guests at the same time. Mr. Adams is now weighing clerk for Swift & Company.

A beautiful home wedding occurred Monday evening, February 16, 1903, when Mr. Allen Wilson Staver, of Lenexa, Kan., and Miss Jessie Geneva Bayless were married at the home of the bride's mother, at Yates Center, Kan. The house was profusely decorated with holly, mistletoe, ivy vines, palmetto leaves, roses, violets and narcissus blossoms, all sent by the bride's brother, who lives in Louisiana. The guests all arose as the wedding party entered the parlor. Miss Jeanette Perry, of Manhattan, and Dr. Benj. F. Staver, of Kansas City, Mo., preceded the bride and groom as they all took their places under a bower of green and white in one corner of the room. The bride carried a large bouquet of white roses, and looked more charming than ever in her gown of white batiste and lace. Rev. C. W. Bailey, of Yates Center, performed the ceremony, and after congratulations and best wishes had been extended by all, a three-course wedding supper was served in the dining-room. On account of the recent death of the bride's father, only relatives and a few intimate friends were invited. Those present were Mrs. E. E. Voigts, of Merriam, Kan., and Miss Cora Staver, of Lenexa, sisters of the groom; Dr. Benj. F. Staver, of Kansas City, Mo., brother of the groom; Miss Jeanette Perry, of Manhattan; Mrs. H. M. Beckett, of Olathe, and Mrs. H. P. Normington, of Yates Center. Mr. Staver was a student at this College in 1894.5 and 1895.6 and Mrs. Staver graduated here in 1898. They will be at home to their friends after the first of May, at Lenexa, Kan.

Prof. Charles L. Marlatt ['84], of Manhattan, Kan., now a renowned entomologist of the department of agriculture, delivered the first of a series of illustrated popular lectures under the auspices of the Biological Society of Washington, yesterday afternoon, in the lecture hall of the National Museum. His subject was "An Entomologist in Japan and China." Professor Marlatt spent fourteen months in those countries during the years of 1901 and 1902, arriving in China shortly after the "boxer" uprising had been put down. He was in search of a natural enemy of the San This insect, which has been so injurious to American fruit, was imported into this country years ago from northern China in some fruit seeds sent here by a missionary. It multiplied rapidly and American fruit was tabooed by foreign nations and even to-day no fruit that has the slightest taint of this scale is permitted to be imported into Europe. The department of agriculture determined to fight the scale by importing its natural enemy, if it could be found. Professor Marlatt went first to Japan. The scale is there, but had been imported. North of the great wall of China, however, he discovered its native home and its natural enemy in the shape of the Asiatic lady bird beetle. He returned to America last spring, bringing with him five thousand lady-birds. These have been apportioned to different agricultural stations, and though this is in reality an experiment the department hopes that good results will be accomplished in two or three years. Professor Marlatt illustrated his lecture with over a hundred lantern slides.— Capital.

NOTES FROM THE WASHINGTON ALUMNI.

Chas. Scott, of the bureau of forestry, has returned from a somewhat extended western trip.

C. C. Georgeson has returned to Alaska, after a short time spent in Washington in the interest of his work there.

Fred. G. Kimball, of St. Michaels, Alaska, is making a short visit to Washington in connection with his work as postal clerk.

At a recent business meeting of the W. A. A. of K. S. A. C., held at the home of M. A. Carleton, the members were treated to a lunch of bread and butter and tea, the bread being made from macaroni wheat. As nearly all know, this is the drouth-resisting wheat being introduced into the West by M. A. Carleton, and is grown particularly for macaroni, but, as was fully proved that evening, will also make excellent bread. The bread was made by Mrs. Doane and L. A. Fitz.

On the evening of February 10, 1903, the Washington Alumni Association of the K. S. A. C. held its second annual reunion at Rauscher's. The occasion was one of unusual interest and pleasure. The members, with those formerly connected with the College and a few invited guests, assembled at eight o'clock and after a short time spent in renewing old acquaintances the association was called to order by G. F. Thompson. C. L. Marlatt then gave a short talk on reminiscences from the students' standpoint; responded to by G. H. Failyer with a few bright and interesting views from the standpoint of the Faculty. Congressman W. A. Calderhead was then introduced and in a few earnest words made us all proud of our State and our College, inspiring all with a wish to be more worthy of the good things he said of us as representatives of the Kansas State Agricultural College. After his talk followed roll-call of familiar College quotations. and reminiscences, which called out many cheers. A buffet supper was then served, after which we were recalled to the parlor by some stirring music, Mrs. Hall at the piano. After being called to order again our representative, Congressman at-large C. F. Scott, was introduced and gave a very interesting talk on Kansas, its institutions, its people, and one of its great men, John J. Ingalls. The remainder of the evening was spent in singing College songs, closing with the College yell, given from good, strong Kansas lungs, and all left feeling the inspiration of the time and more loyal than ever to our Alma Mater. Those present were, Congressmen W. A. Calderhead and C. F. Scott, A. S. Hitchcock, C. C. Georgeson, G. H. Failyer and G. F. Thompson, former professors of the College; M. A. Carleton, Mrs. M. A. Carleton, C. F. Doane, Mrs. Margaret Carleton-Doane, W. L. Hall, Mrs. Gertrude Lyman-Hall, J. B. S. Norton, Mrs. Gertrude Havens Norton, L. A. Fitz, H. B. Kempton, C. L. Marlatt, W. R. Spilman, Mrs. Bertha Winchip Spilman, C. P. Hartley, F. C. Weber, L. W. Call, Mrs. L. W. Call, E. P. Hanna, D. B. Swingle, Chas. Scott, W. O. Lyon, Nellie Thompson, Mrs. A. S. Hitchcock, Z. L. Bliss, F. G. Kimball, and a few invited guests.

DAIRY NUMBER

Historical Society

THE

NDUSTRIALIST

VOL. 29

NO. 20

ISSUED WEEKLY BY

KANSAS STATE AGRICULTURAL COLLEGE

Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

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TOTAL RECORD OF PRIZE HERD FROM MARCH, 1902, TO MARCH, 1903.

Record	Rank	69 4 63 09 00 50 50 € €
Judge's Rank	For profit	8-8-5-6-8-6-4
	Oat hay	22 22 22 23 23 23 23 23 23 23 23 23 23 2
	Cut cane	681 681 681 681 681
	Ensilage	601 601 601 601 601 601 601
shness	Millet hay	200000000000000000000000000000000000000
Feed — Roughness.	Cow-pea hay	324 324 324 324 324 324 324 324 324
Fee	Green alfalfa	000000000000000000000000000000000000000
	Kafir-corn stover	25.2 25.2 25.2 25.2 25.2 25.2 25.2 25.2
	Alfalfa	3295 3295 3295 3295 3295 3295 3295 3295
Grain.	Corn chop	459 474 474 330 330 411 576 527
Feed—Grain	Bran	1524 1569 1801 1082 1129 1226 1120 1124 1124
	Fresh	Nov. 3, 1901. Jan. 10, 1903 Dec. 10, 1901. Dec. 5, 1902 Jan. 28, 1902. Jan. 29, 1903 Jan. 12, 1902. Jan. 20, 1902. Jan. 15, 1902. Feb. 12, 1903 Apr. 1901. May 3, 1902 Oct. 1901. Nov. 10, 1902 Dec. 25, 1901.
	Selected by	J. W. Bigger. E. C. Cowles. J. M. Cumingham. M. L. Dickson. C. L. Elssaser. C. A. Johnson. C. C. Lewis. G. L. Priest.
	Name of Cow.	Cowslip Haster Rose of Cunningham Clover Leaf. Molly Rose of Industry. Daisy Belle Floss May Queen.
No		243 244 244 245 241 240 246 246 246

VIELD-MILK AND BUTTER FAT

Totals.	Butter fat, lbs	301.59 274.89 204.37 304.37 200.28 222.30 273.17 273.24
Tot	Milk, lbs	5978.3 7563.5 7579.3 5530.9 596.9 5972.9 6329.7
Feb.	Butter fat, lbs	
	Milk, lbs	832.6 832.6 623.9 278.6 339.4 348.4 390.3
Jan.	Butter fat, lbs	0 27.36 17.50 6 12.61 0 17.75 3 23.24 1 30.53
	Milk, lbs	880 387 387 545 545
Dec.	Butter fat, lbs	10.10 10.10 11.23 11.23 11.23 11.23 12.20 13.20
О	Milk. lbs	333 315 315 340 579 562
Nov.	Butter fat, lbs	8 16.00 0 11.29 0 11.20 11.64 11.64 15.71 9 24.15 9 24.15
Z	Milk, lbs	275 209 186 332 110 317 581
Oct.	Butter fat, lbs	28.36 11.45 11.45 11.45 18.26 18.26 18.26 18.26 18.26 18.26 19.26 10.26 10.26 10.26 10.26 10.26 10.26 10.26 10.26 10.26 10.26 10.26 10.26
0	Milk, lbs	69 476. 84 314. 56 415. 79 513. 11 466. 11 755.
Sept.	Butter fat, lbs	28 29 29 29 29 29 29 29 29 29 29 29 29 29
Ŋ	Milk, lbs	385. 385. 385. 569. 552. 767.
Aug.	Butter fat, lbs	25.29 25.29 25.29 25.29 25.29 27.29 27.29 27.29 27.29 27.29 27.29 27.29 27.29 27.29 27.29
A	Milk, lbs	16 585. 29 5825. 558 913. 60 610. 844 844 855 914.
July.	Butter fat, lbs	25.55 25
r	Milk, lbs	64 559. 41, 826. 73 633. 89 842. 88 842. 88 628.
June.	Butter fat, lbs	23 23 23 23 24 24 25 25 25 25 25 25 25 25 25 25 25 25 25
J	Milk, lbs	88 658 01 793. 10 664 10 684 10 684 1
May.	Butter fat, lbs	2.4 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5
-	Milk, lbs	00 797. 00 878. 97 1241. 34 830. 91 838. 91 838. 91 564.
April.	Butter fat, lbs	28.28.28.28.29.29.29.29.29.29.29.29.29.29.29.29.29.
,	Milk, lbs	889 762. 288 743. 288 743. 295 726. 297 791.
March.	Butter fat, lbs	6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6
A	Milk, lbs	761. 1200 1200 733 824 802 802 503

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MANHATTAN, KAN., MARCH 3, 1903.

No. 20

CHEAP AND EFFICIENT CALF QUARTERS.

ONE of the reasons for failure in rearing calves on skim-milk is the lack of proper quarters for the calves. The old way of feeding a calf from a pail in an open lot may do if there is but one calf. Where there are two calves in the lot together, the trouble begins; if there are more than two, the trouble multiplies with each additional calf. We may tie them with ropes, but in this, as in many other things, time is money, the ropes are gone half the time, and the calves will not always want to come without persuasion.

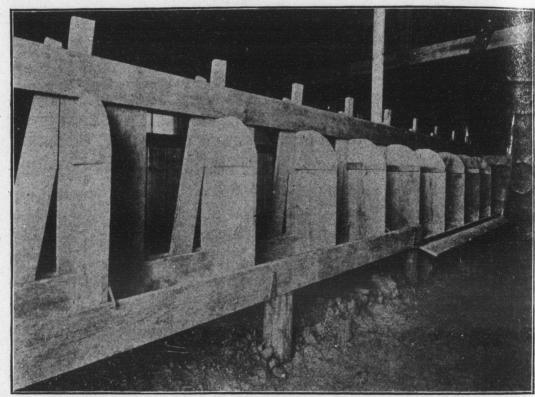
When a neat, strong and efficient stanchion can be made like the accompanying illustration, there is no excuse for the old "happy-go-lucky" way of doing things. For successful work in rearing calves, one must have a shed for them in stormy weather and in hot weather.

We grant that the dairyman has this shed, and that it is at least sixteen feet wide and closed tight on the north side and the ends. It may be built out of any kind of material, even to the straw roof, if nothing better can be afforded. It may be any length, so that it affords sufficient room for our calves. Under this shed, three and one-half or four feet from the back wall, can be built our stanchions. The photographs show their general construction. The lumber for a section of ten stanchions is as follows: Thirteen pieces one by six by fourteen feet, three pieces one by four by fourteen feet, two pieces one by twelve by fourteen feet, and two pieces one by twelve by sixteen feet. Other materials would be twenty bolts, three and one-half by three-eighths, four six-inch strap hinges, four hooks, and the necessary nails to put all together. Common fencing boards can be used for the four- and six-inch stuff, and hard-pine sheeting, free from knots, for the feed boxes and partition between them.

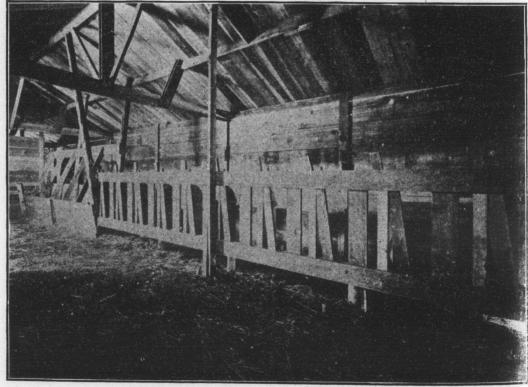
The stalls and stanchions are two feet wide between the partitions and three and one half feet high. The board along the front

THE INDUSTRIALIST.

CALF STANCHIONS



FRONT VIEW



BACK VIEW

of the feed boxes is hinged so it may be turned down and the boxes thoroughly cleaned out. The three and one half foot alley between the front of the stall and the wall gives plenty of room for the feeder to work in feeding milk and grain.

The calves quickly learn their places. They can get no feed until they are in place, when a simple turn of the wrist fastens them. When they are through eating their grain, the loose side of the stanchion is thrown back and the calf is free. At the end of these stanchions should be made a rack for hay, as shown in the photograph. This is the cheapest labor saver and money maker on the dairy farm, except the hand separator. Ed. H. Webster.

CHEESE AS A FOOD.

WHAT more important questions can occupy our attention than those relating to human food. The advancement and development of the race depends primarily upon its aliment. And as man is the ultimate of all earthly creation, his food should consist of the best elements in earthly production. In vegetables we find all the elements composing the bodies of animals, but in a lower state of organization. The cow eats grass and finds in it all the elements necessary to build up and support her own system, and these she concentrates and elaborates into a higher form of food for man.

The muscles, nerves, and brain power of man must be supported by nitrogenous food and the more concentrated this food is the greater the muscular power will be, the more sensitive the nerves and the keener the intellect. Shakespeare understood this when he made Cassius say:

Now in the name of all the gods at once Upon what meat does this our Ceasar feed, That he has grown so great.

The more we progress in chemical knowledge the better we understand digestion and nutrition, hence the "balanced ration" which is as necessary for man as for the lower animals. It then becomes of great importance that we should understand the elements of the food we use, and learn to so combine these as to produce the highest development of health and strength. Hygienic writers take milk as the best standard for human food. Cheese is concentrated milk; all the elements save the sugar are retained

which is easily supplied by other food. The history of cheese dates way back in ancient times. We find Job referring to it thus:

Hast thou not poured me out as milk, And curdled me as cheese?

Cheese was a common article of food among the Greeks and Romans, and Homer celebrated its virtues in the feasts of those times, thus:

There thrice within the year the flocks produce, Nor master there, nor shepherd ever feels The dearth of cheese, of flesh, or of sweet milk Delicious drawn from udders never dry.

It is not enough to know that food is agreeable to the palate and easily digestible, but what are its constituents and what part of the system it builds up. The human system being complex to its elements, its food must likewise be complex and various. The young receive in the form of casein (cheese) the chief constituents of the mother's blood. When chemically examined, casein is found to contain a much larger proportion of the earth of bones than does blood, and that in a very soluble form capable of reaching every part of the body.

If milk is the standard of human food, cheese, its important product, must be healthful, unless it shall have changed its elements or condition in the process of manufacture. Therefore, a cheese to have its greatest nutritive value must be properly made, well ripened and carried on to that easily digestible stage by the agent rennet. A pound of such cheese is said to be equal in value to beef steak, pound for pound, as eighteen and one-half is to ten.

As cheese contains all the elements of milk except the sugar, this does not render it less healthful or digestible, but only deprives it of this supporter of heat and respiration, which is easily supplied in other foods, such as bread, potatoes and other vegetables. The fat adds to the digestibility of cheese, hence whole milk cheese is more easily digested than skim milk cheese. The best proof of its healthfulness is found in the fact of its use among all civilized people. The long experience of the English, Scotch and Irish laborer proves cheese to be the most wholesome as well as nutritious food. A small quantity of cheese with them takes the place of a larger quantity of meat, and enables them to endure such hard labor as the American thinks he can only per-

form upon a generous meat diet. In Germany the farm laborer depends largely upon skim-milk cheese as food. The American Encyclopedia says:

The peasants of some parts of Switzerland, who seldom ever taste anything but bread, cheese and butter, are a very vigorous people.

Americans generally speaking eat too little nitrogenous food, owing perhaps to their predilection for the finest flour and much pastry, especially pie. Women are not such flesh eaters as men, and with their love of sweetmeats the nervous system becomes illy nourished; these sweetmeats are nearly all starch and sugar. If they would make cheese a more constant article of diet and use more unbolted flour, with more open-air exercise, they would soon become the most healthful and robust, as they are now said to be the most beautiful women in the world. Cheese is less liable to putrefactive changes than flesh and thus much less likely to develop in the human system those scrofulous diseases attributed to animal food.

Thus, in summing up, it appears evident that the casein of milk is a highly important alimentary principle, and proves equally healthful and invigorating whether taken in the liquid state of milk, or in the concentrated form of cheese. Although the American people are more favorably situated for the production of cheese, more especially in the northwestern part of the union, we have not learned to use it as a daily diet. I think one reason is we eat our cheese too soon after making and do not give it time to ripen properly. Such cheese is hard to digest and really not fit to eat. If we examine the question of economy in reference to the comparative prices in market we find that retail prices of cheese range from sixteen to twenty-two cents per pound, about the same as beef, showing cheese to be about half as much as beef, according to its real value. If we compare it with pork, or mutton, or fish, we shall find it the cheapest food. There is very little waste in cheese, while beef is one-eighth bone. It also has the advantage of requiring no cooking, and in the warm season saves the poor the expense of fire. Of all forms of animal food it is undoubtedly the most economical.

The dairyman who would produce cheese will not have to look for a foreign market for some time, as the per capita consumption of cheese in the United States is only three pounds while butter is about twenty pounds per capita. Therefore, if he

will manufacture the best quality of cheese he will find a good demand for it, and let us hope the American people will soon become a greater consumer of this most nutritious food, cheese.

W. W. GRANT.

THE NEW QUARTERS FOR OUR DAIRY COWS.

THE cows with which the Farm Department began the work of building up a dairy herd at the Kansas State Agricultural College were first quartered in the basement of the old College barn. This damp, underground dungeon into which the sunlight rarely, if ever, penetrates was made to do duty as the "dairy cow barn" up to the building and equipment of the present structure which forms the subject for this sketch.

In 1899 three thousand dollars was appropriated for the building of a dairy barn which would be worthy the name and for the purchase of additional cows. The building shown in Plate 1 was erected from this fund at a cost of about two thousand dollars. It is one hundred seventy-five feet long by thirty-eight feet wide; the walls are double, and the whole interior is floored with concrete and cement laid crowning down the middle, the whole surface I aving a slight slope to the west, where the gutters lead to trapped drains. This newly completed structure, however, was not destined for immediate use as a dairy cow barn. The first year its only use was as a room for dairy industrial work; then came the fire destroying the chemical building and the cow barn served as a makeshift chemical laboratory for two years.

In the fall of 1902, a fund was set aside for the equipment of the new barn, and early in January, 1903, the dairy cows, after first being subjected to a tuberculin test, were established in their new home. A feeding alley twelve feet wide, unobtructed by beams or braces extends from end to end. The rows of stalls, twenty-six on a side, face this alley, having a four-foot walk slightly sloping toward the gutter behind them. Sliding doors ten feet high give entrance from the outside, as shown in the cut. The west end has small doors at each corner for the entrance of cows to the stalls.

The stall, which was selected only after much investigation and deliberation, is "The M. J. Drown Iron Cow Stall," manufactured by Garlius & Young, Madison, Wis. It combines greater possibilities for the comfort and absolute cleanliness of animal and

product than any stall investigated. Two views of the stalls are shown in plates 2 and 3, the first giving the stall as occupied by the cow while the second shows the sides thrown up and the chains unhooked. The sides can be swung to the right when down and fastened in any position desired by dropping the chain into the slot at the rear end, thus giving the milker space and making it impossible for the cow at his back to crowd him. The



PLATE I

stalls in the barn are of two widths: three feet six inches and three feet three inches. Some small cows will turn around in the wider stalls. The front is formed by a swinging gate adjustable backward or forward according to the length of the cows. This gate or front has a short chain at the bottom by which it is hooked to the rod clamped across the stall just above the edge of the manger. The sides are firmly held by being clamped into a deep slot in the rear post.

The mangers are made of wood, but are pointed up with cement around the floor, thus preventing food or other material from working into the cracks. The handling of feed and manure is very easily accomplished by means of the track and carriers. The cuts show the arrangement of the track better than it can be described. Plate 4 gives a perfect view of the carrier used for



PLATE II

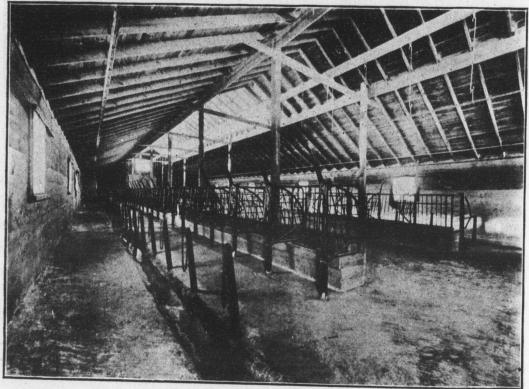


PLATE III

feed. The three lines of track are brought together at the west end of the barn by curves and switches, and a section extends outside far enough to permit the manure to be dumped directly into a wagon or spreader.

A room for the use of the herdsman occupies the southeast corner. Two rooms are provided for the care of the milk, and



PLATE IV

one as a dressing-room for the boys who milk and do other work about the barn. A hundred-gallon tank, connected with a heater, supplies the hot water for the milk rooms.

One room contains a "Star" milk cooler, through which hot or cold water can be run, a Shepherd aerator, and a hand separator. The other room contains the sink for washing utensils and shelves for cans, pails, and other articles. The dressing room contains the heater mentioned above, a sink, a row of lockers and a table. On the left-hand side of the wide central alley are arranged the bins for storing feed. Six box stalls occupy the space between the rooms and the iron stalls. The barn as now equipped is an enormous stride in advance of the basement so long used. In furnishes light, airy and comfortable quarters for our cows and marks an important epoch in our dairy development.

Geo. C. Wheeler.

CREAMERIES, SKIMMING STATIONS AND CHEESE FACTORIES.

Compiled by Dairy Department, Kansas State Agricultural College, Manhattan, Kan. Towns in boldface type indicate churning points. Corrected to March 1, 1903.

Acme Creamery Association.—Acme, Bonacord.

Admire Creamery Company.—Admire.

Armstrong, C. F.-Clyde, Brantford, Clifton, Concordia, Day, Huscher, Talmo, Hollis, Coma.

Baden, J. P., Produce Company.-Winfield.

Basehor Creamery.-Basehor, Birmingham, North Cedar, Half Mound, Wallula.

Belle Springs Creamery Company.—Abilene, Appleville, Beverly, Bormer City, Brookville, Chapman, Culver, Dayton, Dillon, Donegal, Ellsworth, Frederick, Geneseo, Gypsum City, Holland, Ladysmith, Longford, Lorraine, Moonlight, Navarre, Niles, Rhinehart, Salina, Talmage, Tescott, Trudell, Upland.

Blue Mound Creamery Company.—Blue Mound, Bush City, Kossuth, Mapleton.

Brady-Meriden Creamery Company.—Kansas City, Mo., Boyle, Cadmus, Dunavant, Easton, Eudora, Kincaid, Lamisburg, McLouth, Meriden, Neodesha, New Lancaster, Rock Creek, Valley Falls, Winchester.

Brandt, D. S.—Dwight.

Bull, John (Cheese).—Cimarron.

Burlington Creamery Company.—Burlington.

Cawker City Creamery Company.—Cawker City, Dispatch, Car Creek.

Continental Creamery Company.—Topeka, Agra, Allison, Almena, Alton, Angelus, Arkansas City, Auburn, Asherville, Aroma, Ada, Augusta, Aurora, Americus, Belmont, Berryton, Barclay, Bala, Brewster, Brownell, Belleville, Benton, Bethel, Beloit, Belvoir, Blue Hill, Basil, Bendena, Big Springs, Beeler, Beaver Valley, Burr Oak, Bogue, Carbondale, Clay Center, Coal Creek, Conway Springs, Comiskey, Council Groves, Conway, Clayton, Canton, Cheney, Colby, Collyer, Colbert, Cunningham, Cottonwood Falls, Centralia, Caldwell, Danby, Denmark, Dunlap, Densmore, Dresden, Dinas, Delevan, Downs, Dorrance, Douglass, Dubuque, Conway, Clayton, Canton, Cheney, Colby, Collyer, Colbert, Cunningham, Cottonwood Falls, Centralia, Caldwell, Danby, Denmark, Dunlap, Densmore, Dresden, Dinas, Delevan, Downs, Dorrance, Douglass, Dubuque, Enterprise, Elyra, Elmdale, Ellen, Emporia, Everiss, Erpelding, Eureka, Everest, Frankfort, Ford, Formosa, Fowler, Fairview, Gorham, Galva, Green Mound, Goddard, Goodland, Garfield, Glasco, Galatia, Gaylord, Gaeland, Greenleaf, Grainfield, Gem, Glen Elder, Hartford, Halford, Hill City, Harris, Horton, Howard, Hoyt, Holton, Hoxie, Irving, Idana, Inman, Industry, Jamestown, Jewell City, Jennings, Johnstown, Kirwin, Kanapolis, Keats, Kanarado, Kingman, Lecompton, Lenora, Leon, Lehigh, Little River, Little Valley, Lincoln, Linn, La Crosse, Langdon, Leonardville, Logan, Louisville, Lost Springs, Luther, Lyndon, Lindsay, Lamar, Lucas, Levant, Latimer, Menlo, McPherson, Maxon, Menno, Meriden, Michigan Valley, Mingo, Marvin, Moline, Milton, Mankato, Meredith, McCracken, Mound City, Mound Ridge, Mont Hope, Mound Springs, Moreland, Mulvane, Manchester, Miltonvale, Narka, Natoma, Norwich, Norway, Ness Orion, Olsburg, Osborne, Olivet, Onaga, Otis, Page, Pawnee Valley, Philipsburg, Pekin, Peck, Penalosa, Plainville, Portis, Pontiac, Preston, Parallel, Pretty Prairie, Palco, Pratt, Paxico, Quinter, Quincy, Ramona, Rosemont, Riley, Reamsville, Riverside, Rossville, Rhinehart, Ransom, Saffordville, Selden, Scandia, Seguin, Stuttgart, Sharon, Sylvan Grove, Stockdale, Sharon Springs, Saltville, Soldier, Scottville, Sunflower, Speed, Tampa, Thompsonville, Turkey Creek, Tully, Turon, Utica, Varney, Viola, Victor, Vine Creek, Vassar, Vesper, Wichita, Wakeeney, Waldo, West Branch, Wallace, Wakefield, Winona, Walsburg, White House, White City, Woodbine, Yorktown, Zenda, Zurick, Zenith. Continental Cheese Factories.—Rhinehart, Bridgeport, Herington, Carlton, Melvern, Reno, Burlingame, Reading, Humboldt, Neosho Rapids, Kipp, Buckeye, Sutphen, Allen, Nortonville, Detroit, Strickler, Whiting, Dover, Potter, Beloit, Williamsburg.

Crawford County Creamery Company .- Pittsburg, Arma, Brazilton, Opolis, Hickory, Girard, Walnut.

W. W. Egbert (cheese).—Cimarron.

Eskridge Creamery Company.—Eskridge.

Farlington Creamery Company.—Farlington.

Floral Creamery Company.-Floral, Atlanta, Latham, Wilmot,

Glengrouse, Burden, Cambridge, Tisdale.

Forest Park Creamery Company.—Ottawa, Baldwin, Briles, Centropolis, Clearfield, Colony, Edgerton, Gardner, Garnett, Halls Summit, Pomona, Williamsburg, Lebo, Hoods, Lane, LeLoup, Mt. Ida, Norwood, Pioneer, Pleasant Hill, Pressonville, McCandlass, Prairie Center, Rantoul, Homewood, Quenemo, Vassar, Waverly, Wellsville, Willow, Springs Homewood, Quenemo, Vassar, Waverly, Wellsville, Willow Springs, Princeton, Welda, Sugar Vale.

H. C. Funk.-Durham, Alvine, Schrader. Fulton Creamery Company.—Fulton.

Fort Scott Butter Company. - Fort Scott, Branson, Deerfield, Fulton, Harding, Hepler, Hiattville, Mapleton, Pawnee, Redfield, Uniontown, Moran, Dovan.

Girard Creamery Company.—Girard. Greeley Creamery Company.—Greeley.

Greenbush Creamery Company. - Walnut, Greenbush, Shultz Farm,

Porterville. Heizer Creamery Company.-Heizer, Albert, Alexandria, Bazine, Bison, Hodgeson, Francis, Pawnee Rock, Timken.

Hess & Erb.-Harper, Argonia, Duquoin, Spivey.

Hesston Creamery Company.—Newton, Peabody, Sedgwick, Bentley, Burrton, Buhler, Ebenfeld, Elbing, ElDorado, Furley, Goessel, Halstead, Hesston, Kechi, Potwin, Rock Springs, Sandy Creek, Severy, Sunnydale, Trousdale, Towanda, Whitewater.

Hope Creamery Company.—Hope.

Hillsboro Creamery Company.-Hillsboro, Aulne, Canada, Menno.

Iola Creamery Company.-Iola, Moran.

Junction City Creamery Company.—Junction City, Alida.

Kerr, W. J.—Palmer.

E. I. King & Co., -Logan.

Leavenworth Dairy and Creamery Company.—Leavenworth, Denison, Jarbola, Kansas City (Kan.), Kickapoo, Standish, Winchester.

Lone Star Cheese Company.—Lawrence, R. F. D. 8.

McCune Creamery Company.-McCune, Laneville.

Merritt, W. G.-Great Bend, Classin, Coal Creek, Hanston, Jetmore, Nekomia, Olmitz, Shaffer, Rush Center, Otis, Hargrave, Galatia, Verbeck. Neosha Valley Creamery Company.—Chanute, Vilas, Leanna,

Urbana, Earlton, Piqua, Quincy.

Nessley, I. E. & Co.—Topeka.

Norton County Creamery Company.—Norton, Clayton.

Nortonville Cheese Manufacturing Company.—Nortonville.

Overbrook Creamery Company.—Overbrook, Appanoose, Globe.

Parkman, G. W. & Son.—Emporia.

Parker Creamery Company.—Hutchinson.

Pleasanton Creamery.—Pleasanton.

Pleasant Hill Cheese Company.—Chapman.

Queen City Creamery Company .- Parsons, Altamont, Dennis, Morehead, Galesburg, South Mound, Erie, Edna, Oswego, Bartlett.

Reading Cheese Factory.—Reading.

Richmond Creamery Company.—Richmond, Pomona.

Rutledge, T. A. (cheese.) - Maple Hill.

Rock Creamery Company.-Rock, Akron.

Sabetha Creamery Company.—Sabetha.

Scotch Plains Creamery Company. - Scotch Plains, Belleville. Schrock Bros.-Yoder, Bland, Colwich, Darlow, Groveland, Medora, Partridge, Windom.

Spencer, A. B. (cheese).—Spearville.

Spencer, Henry (cheese).-Ravana.

Spring Hill Creamery Company.—Spring Hill, Bucyrus.

Tiemeier, H. W.-Lincolnville, Antelope, Highland.

Tonganoxie Creamery Company.—Tonganoxie, Hodge, Neely, Reno.

Troy Creamery Company.—Troy.

Walton Creamery Company.-Walton, Creswell, Good.

CORN-JUDGING SCHOOL.

EGINNING February 10, the classes in agriculture were given a week's work in scoring corn. This is a new line of instruction at the Kansas State Agricultural College, given this term for the first time. The work was undertaken rather as an experiment, but has proved a great success. The students took hold of the study with a zest and an interest which was very encouraging to the professor in charge. Professor Ten Eyck and assistant Shoesmith were assisted by several of the senior students, and all were kept very busy in the judging room, looking after the wants of the three hundred students who took the work.

The College is not well equipped at present in the way of buildings and room to successfully give instruction in this new and valuable line of work. The present classes were accommodated in the stock judging room at the barn, where, by the construction of rough tables, provision was made for handling about one hun-

dred fifty students at one time.

The hope is that this may be the beginning of a grain-judging school such as has been established at the Iowa Agricultural College, to which the farmers of the State may be invited for two or

three weeks each winter.

There is little doubt of the value of such training to the practical farmer. Like produces like with the plant as well as with the Stock judging has proved to be one of the most valuable and practical educational features of our agricultural colleges, and it is now firmly established as a part of the instruction given in all of the best institutions. Grain judging is just as practical and perhaps just as important as stock judging. We need better bred corn and grain for Kansas, and a systematic course of instruction in the principles of plant breeding and grain judging is what our farmers need and must have before a general permanent improvement in this line can be accomplished.

A. M. TEN EYCK.

Professors McIntyre and Dickens attended a farmers' institute at Marysville last Wednesday and Thursday.

Professor Popenoe and Assistant Shaw went to Belleville last Wednesday to conduct a farmers' institute at that place.

Prof. A. L. Hecker, of the Nebraska State Agricultural College, will be here this week and assist in the work of judging dairy cattle.

Our new Shorthorn bull, Ravenswood Admiration, scored 97\frac{3}{8} per cent at the judging school. The score was given by expert John Gosling.

All the meetings advertised on the official program of the Dairy Association will be held in the College chapel. The stock judging will be in the old barn.

Parties wishing to buy College cheese should leave their orders with the Dairy Department. The quantity for sale is not large and "first come, first served."

Prof. C. H. Eckels, of the department of dairy husbandry of the University of Missouri, has promised to attend the dairy convention and assist in scoring the butter.

The State Swine Breeders' Association will meet Thursday and Friday of next week at this College. The meetings will be held in connection with the course in swine judging.

Mr. Gosling gave a very good talk on beef cattle last Friday night in College chapel. A large number of students were present and all were interested in the practical remarks made by him.

There was much interest manifested last Friday afternoon in the stock arena, over the work of judging the steers that will soon leave for the slaughter tests in Kansas City. One large steer, although a very fine animal, showed an excessive amount of fat for a good butchering animal.

The judges on the College song contest have decided in favor of the composition of H. W. Jones, '88, of Topeka. The song is entitled "Alma Mater." It will soon be published in neat form by the College literary societies, who offered a cash price of \$25 for the best production in the contest.

Professor P. G. Holden, of the agronomy department of the Iowa Agricultural College, will lecture next Friday evening in the College chapel on the subject of "Corn Breeding." The professor is one of the leading men in this work and his lecture will be a valuable one for all interested in agricultural work.

Visitors at the College this week should not fail to see the exhibits of butter, dairy machinery and hand separators in the Agricultural building. The butter will be on the second floor at the head of the west stairs, the dairy machinery will be in the hallway and the hand separators in the southeast room of the first floor.

PROGRAM FOR KANSAS STATE DAIRY ASSOCIATION, MANHATTAN, KAN., MARCH 3-6, 1003.

KAN., MARCH 3-6, 1903.
THESDAY EVENING MARCH 2
President's Address, Parsons, Kan. TUESDAY EVENING, MARCH 3. Geo. H. Littlefield
Relative Value of Feeds, Editor Kansas Farmer E. B. Cowgill
Why We Do Not Eat More Cheese, W. W. Grant Instructor in Cheese Making, Kansas State Agricultural College.
WEDNESDAY MORNING, MARCH 4.
Rotation of Crops, Prof. A. M. Ten Eyck Agriculturist, Kansas State Agricultural College.
Cow Inquiries, Prof. D. H. Otis Professor of Animal Husbandry, Kansas State Agricultural College.
The Dairy Cow West of the Missouri River, - J. Fred Schlappi Feeder of Model Dairy Herd, Buffalo Exposition.
WEDNESDAY EVENING, MARCH 4.
Entire Program by Second-year Dairy Students of Kansas State Agricultural College.
Milk as a Condensed Farm Product, R. E. Williams
Where the Profit Comes From, H. R. Webster
The Kansas Dairy Cow: What She Is and What She Ought to Be, J. Nygard
Poultry as an Adjunct to the Dairy, Milo Hastings
Educational Influences in Dairying; Their Need, - M. H. Matts
THURSDAY MORNING, MARCH 5.
What I Think of Dairying and How I Succeeded—Five Minute Talks by Dairymen, - J. F. Robinson, Beloit, Kan., will open discussion
Dairy Catechism, A. L. Cottrell and L. S. Edwards
The Correct Reading of the Babcock Test, Topeka, Kan. C. E. Gray
THURSDAY EVENING, MARCH 5.
The Abuse of the Hand Separator, - Prof. E. H. Webster Professor of Dairying, Kansas State Agricultural College.
Address, Professor of Dairy Husbandry, University of Missouri, Columbia.
Discussion of Hand Separator Methods, Results, etc.
FRIDAY MORNING, MARCH 6.
What the Successful Skimming-Station Operator Should Know and Do, C. C. Turner

C. C. Turner Manhattan, Kan.

How I Secured a Big Patronage at My Skimming Station, E. C. Mewhirte Brewster, Kan.

FRIDAY EVENING, MARCH 6, AT 8 O'CLOCK.

Corn Culture and Breeding, - Prof. P. G. Holden Professor of Agronomy, Iowa State College, Ames, Ia.

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NUMBER 21.

Historical Society

THE

NDUSTRIALIST

ISSUED WEEKLY BY

KANSAS STATE AGRICULTURAL COLLEGE

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Local Editor, - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

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THE INDUSTRIALIST.

VOL. 29.

MANHATTAN, KAN., MARCH 10, 1903.

No. 21

MOLDING.

IRON molding is the art of making in sand the various forms of molds peculiar to the many needs of constructive cast-iron work. The man skilled in this work is known to the founding trade as a molder.

Molding is divided into two great classes, (a) dry sand and loam molding and (b) green sand molding. In dry sand molding patterns are seldom used, the molds being built up of brick and loam according to plans and specifications. The finished mold is thoroughly dried in a drying oven, or by building charcoal fires in it. When thoroughly dry they are ready for pouring. This branch of the trade comprises the making of heavier class of iron castings, such as large cylinders and engine beds. The molder skilled in this class of work is a loam and dry sand molder. In green sand work, the molds are not dried. They are therefore ready to be poured as soon as finished. In green sand molding, forms or patterns are generally used in construction of the molds. and green sand work, the latter is by far the most extensive. includes the making of castings for agricultural implements, machine work, house work, stove plate, and novelty work. molder may be skilled in any one or all of the classes of green He is known as a green sand molder. sand work.

The material used for molding must be porous enough to allow the easy passage through it of gases that are formed in pouring. It must be compact enough to resist the pressure of the metal and its exuding through the pores. It must be free from elements which will enter into chemical combination with iron. It must also impart a smooth face to the casting made in it. No other material meets these requirements better than sand. It is porous and it is free from elements which will enter into chemical combination with iron. It possesses adhesiveness, retaining the impression made by the pattern imbedded in it and imparting the same form to the metal poured into the mold. The best sand for green sand work is that taken from banks of disintegrated red sandstone. It is composed chiefly of silicon, alumina, magnesia, and metallic oxides. The alumina or clay in the sand gives it its adhesive property.

Before sand can be used in molding it must be tempered; that is, water must be put on the heap of dry sand and the sand shoveled or "cut over." The sand should be of even temper throughout the heap; that is, the moisture should be evenly distributed. The test of temper is to take a handful of sand from the heap and grip it firmly in the hand. If in good temper the sand will retain the form into which it has been pressed—requiring rough handling to overcome its cohesiveness. To temper sand properly requires much experience and the exercise of good judgment. The amount of water put on a sand heap depends upon the character of the sand, upon the class of work set up in it, and to some extent upon atmospheric conditions.

The frame or casing in which the mold is "set up," in the language of the shop, is a "flask." The top section is the "cope," the bottom section is the "drag," and the board upon which the flask rests is the "bottom board." When flasks are in more than two parts, the middle section is termed the "cheek."

Patterns are the forms or models which the molder uses in constructing his molds. They are built with reference to the use for which the casting is intended. The pattern may be a one-part pattern, it may be a split pattern, or it may be in several sections. Draft is given to all patterns, that they may be the more easily drawn from the sand without injuring the mold. The molder studies carefully the pattern with which he is to work, with reference to draft, draw, and parting line.

In setting up a mold the sand is packed firmly in the flask. To thus secure the sand, a rammer is used. In the use of the rammer much care and good judgment must be exercised, as the success of the work depends directly on the way the molder rams up his flask. Light work should be rammed lightly, while heavy work should be firmly secured by heavy ramming. In all cases it is imperative that the mold be evenly rammed; that is, that it be of even firmness throughout. The molder who does not ram his work evenly is an uncertain workman. He may get good results, but the chances are against him. He is invariably the victim of all the misfortune that the molder's lot is heir to, such as

bad lifts, stick-downs, drop-outs, run-outs, swells, scabs, and blowing molds.

It is evident that since the sand is damp when rammed up, a large amount of gas will be generated when molten iron is poured into the mold. To facilitate the easy and rapid withdrawal of these gases from the sand, venting is resorted to. A supply of steel wires is always kept in the foundry for this purpose. Venting consists in perforating the sand, in both cope and drag, with a bent wire to within about an inch of the pattern. Through these openings the gas is conducted to the outside, where it is lighted, burning with a bluish flame. Good, thorough venting is a factor of safety in moulding, whereas inadequate venting not infrequently results in the loss of valuable castings.

In removing patterns from the sand they must first be swabbed; that is, the sand around the edge of the pattern is moistened with water. Care must be exercised in the use of water, as too much is disastrous to good results. The pattern is then loosened in the sand, or rapped, as we term it, by the use of rapping spikes and mallet. It is essential that the pattern be thoroughly yet carefully rapped, as too little rapping renders the drawing of the pattern difficult, while excessive rapping tends to break the continuity of the mold surface. Drawing the pattern is but the work of a few moments—anxious moments to the molder, for he always wishes to secure a good "draw." He removes the pattern by first securely fastening in it draw spikes, draw hooks, or draw screws, as the case may be. Then by these he lifts the pattern, keeping it well balanced and giving it a nervous movement to secure the feel of the pattern, and carefully draws it from the sand.

In finishing the mold, the molder repairs any injury done in the removal of the pattern and then cuts the gates through which the iron flows into the mold. Gates are set and cut with reference to the class of work to be poured. They have their exterior opening on the top surface of the cope.

Casting or pouring off is the work of filling the molds with molten iron. It is the most dangerous part of the molder's work, and that in which the greatest care should be exercised.

The molder's work has in it much uncertainty. Even though he may be the most painstaking, and may feel measurably safe, there is a doubt as to the outcome of his work. Should you be in

a foundry at the close of a "run" you will notice the molder, as he shakes out his work, carefully inspect it. He is looking for something he does not want to find; and as the result so his mood, joyful or gloomy.

A. E. RIDENOUR.

STOCK-JUDGING CONTESTS.

FIVE stock-judging contests will he held during the session of the judging school. These contests will be under the auspices of the Agricultural Association of K. S. A. C. and are open to all students, providing they comply with the following rules:

Purpose.—Recognizing the demand for student judges at the county fairs, and also the need of having K. S. A. C. represented at Chicago in the inter-collegiate stock-judging contests, the association has adopted this plan to determine who are the best judges. The medals will be *prima facie* evidence of the students' ability to judge at the fairs, and the ten best judges of all classes of stock, providing they are eligible to the contest at Chicago, will be expected to prepare themselves for a place in the team which shall represent us there.

Rules Governing Eligibility.—(1) Any student carrying a full assignment in the long or short course, provided he is selected by his class to represent it in the contest. (2) Any student conducting himself in a disorderly manner during the contest shall be barred from the contest.

Rules Governing Awards and Basis for Marking.—(1) Each contestant shall be required to write his decision, in the case of the two animals given highest position, reasons substantiating the same, on the regular printed form adopted by the association. (2) Each contestant will be given an entry number by which he will be designated in each contest, the number being changed for different contests. (3) Any contestant writing his name or placing any other mark than the number assigned him on his written report, will be excluded from the contest. (4) All contestants will be graded on a basis of 100 points, to be divided as follows: Correctness of placing, 55; reasons for substantiating the same, 45. All contestants will be allowed twenty-five minutes to place the animals of each class, and write reasons substantiating their judgment. No additional credit will be given for papers completed before the expiration of twenty-five minutes.

Rules Governing Entries.—(1) All prospective contestants

must be entered the day before the contest. (2) An entrance fee of fifty cents will be charged each contestant, provided he is not a member of the agricultural association, this money being used to defray any expense that may arise. (3) Each class shall be restricted to five representatives.

Rules Governing Classes to be Judged, and Prizes.—(1) Each contestant will be required to judge at least three classes of at least three animals each in any contest. (2) Each contestant shall be eligible to the grand prize, provided his classmates choose to let him represent them in all contests. (3) Alternation of two contestants will be permissible during the series, but three contestants must represent the class continuously. (4) The prizes shall be as follows: Grand trophy, class of three best judges. Best all-class judge. First in chickens, second in chickens; first in dairy cattle, second in dairy cattle; first in beef cattle, second in beef cattle; first in hogs, second in hogs; first in horses, second in horses. Student having highest aggregate score for all contests will be declared best all-round judge and captain of team for next year at Chicago.

SOME PERCEPTION TESTS.

I. Color Perception.—How much more valuable our knowledge would be if the simple little affairs of every-day experience had been learned more definitely and systematically in our child-hood. It is said that there is a time for all things. To this rule the matter of sense perception culture is no exception, for it is generally conceded that the period of childhood and youth is the proper time for such culture.

We mature people continue day after day to make the same old errors in observation and judgment as a result of defective sense training in early years. Moreover, we frequently find ourselves without words to express our feelings simply because of the fact that we have no definite names for our sense impressions. Imagine the difficulty of an effort to describe the splendors of the cloud tints and shades frequently seen at sunset, or the variegated colors of the autumn leaves, if one's color perception is as defective as that of many of the persons considered in this test. And yet I believe that this table fairly represents the young people who have been educated in the rural schools of Kansas. Is it

During the past year I have selected at random and called into my office fifty each of the young men and young women of this College and asked them to try to name the colors listed below. In the case of the mixed colors the students were given the benefit of any doubt, but they were given no credit for any variation from the correct naming of the primary colors. The third column represents the per cent of correct answers as well as the total, as there were exactly one hundred tests. Very few of these failures were a result of so-called "color blindness." The usual case was simply one of color ignorance. The summary follows:

	Number correct			
Colors.	50 Male.	50 Fe- male.	Total and per cent.	
Violet	13	15	28	
Blue	42	44	86	
Green	20	29	49	
Yellow	30	46	82	
Orange	41	48	89	
Red	19	25	44	
Black	49	50	99	
Pink	30	46	86	
Scarlet	15	19	34	
Navy Blue	16	24	40	
Crimson	4	14	18	
Brown	41	43	84	
Slate	19	28	47 -	
Magenta	10	22	32	
Purple	26	34	60	
Drab	22	23	45	
Garnet	14	24	38	
Terra Cotta	8	15	23	

II: ODOR PERCEPTION.—The results of this test are not wholly satisfactory, but they will be given for what they are worth. The odors were placed each in a closely corked vial and passed to the observer one at a time. Notwithstanding the precautions taken there was doubtless some mixing of the odors, but not enough in most cases to interfere seriously with the introspection.

The experiment brought out two minor results of some interest: (1) During the average test, which required about a half-hour, the olfactory nerves became considerably prostrated after a lapse of some fifteen or twenty minutes, but a decided reaction was noticable before the close of the experiment. (2) It was indicated that the nose is a very dependent organ. It is better at verifying judgments than at making original ones. The part it

takes in judgment would be illustrated about as follows: Nose, "I smell something pleasant; what is it?" Eyes, "That is a rose, for I see it." Nose, "Yes, it's a rose." But when thrown upon their own resources, as in this test, the olfactories are very much undecided. Nearly every observer was heard to make some such remark as this: "I know perfectly well what that odor is, but I can't think of it now."

The small number of correct answers given was somewhat surprising. Twenty-five young men and twenty-five young women were called in. The table of results follows:

	Number correct.				
ODORS.	25 Male.	25 Fe- male.	Total.		
Violet	6	5	11		
Red Clover	1	0	1		
White Rose	4	4	8		
Lilac	1	3	4		
Apple Blossom	1	0	1		
Geranium	2	1	3		
Oil of Cloves	14	9	23		
Oil of Peppermint	17	18	35		
Vanilla	9	10	19		
Oil of Pennyroyal	2	2	4		
Nutmeg	14	13	27		
Oil of Almond	3	2 3	5		
Oil of Catnip	0	3	3		
Alcohol	5	1	6		
Terpentine	14	16	30		
Oil of Sassafras	2	1	3		
Tar	22	16	38		
Oil of Wintergreen	4	10	14		
Oil of Cinnamon	9	13	22		
Assafœtida	18	17	35		

The point to the whole story is this: Children ought to be aided and directed in their sense perceptions. For them merely to get a general effect is not enough. Specific names ought to be learned for colors, tastes and odors as they are perceived so that fine discriminations can be made and more valuable observations can become possible. It would be almost as easy for the average child to learn to distinguish the eighteen colors named in this list as to learn the alphabet; and yet, out of the one hundred tested one only was able to recognize them all.

By the aid of a few simple materials, such as color charts and odorous flowers, the average primary teacher could easily give this important instruction in sense perception and thereby equip the mind of the child for richer and fuller sense experience in mature life.

W. A. McKeever.

THE INDUSTRIALIST.

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LOCAL NOTES.

There were 688 pupils enrolled in the public schools of Manhattan last February.

Prof. W. A. McKeever acted as one of the judges on delivery in the State Normal oratorical contest at Emporia last Friday night.

John Warner, of Eureka Lake, has again placed the College under obligations by loaning us a fine Shorthorn bull for the stockjudging school.

The pay-roll of the College for February amounted to \$6787.95. Of this amount the professors drew \$5224.99; the students and employees, \$1562.96.

A new rural delivery route—the fourth one—will soon be established from Manhattan to supply the southwest corner of Pottawatomie county, and two other new routes will probably be laid out in a month or two.

The next number of the College society lecture course will be given in College chapel, April 10, by Prof. John B. DeMotte. The professor lectured here a year ago and will be remembered as a most forceful and entertaining speaker.

Captain McDowell, president of the Board of Regents, attended the meetings of the Dairy Association last week and went to Topeka on Friday to look after the College appropriation bill, which at that time had not yet passed the senate.

Among the many visitors at the College during dairy association week we noticed our old friend and ex-secretary, I. D. Graham, now connected with the editorial staff of the *Kansas Farmer*. The ex-secretary looks as bright and vivacious as ever.

The Athletic Association is planning a musical concert to be given in the College chapel on the evening of March 17, for the benefit of College athletics. The program will be given by home talent both from the College and city, and the best performers available have been secured. Everybody is invited.

A number of well-known breeders of fine stock in Riley, Geary, and Clay counties have advertised a public sale of thoroughbred stock, in the Manhattan sales arena, for March 31, at 1:30 P. M. Among the breeders who will be represented by fine stock are F. M. Gifford, Joe L. McCormick, A. M. Story, and G. E. Avery. Every one interested in stock knows these parties and the high grade of their herds.

About two hundred students went to Fort Riley on Saturday to attend a special cavalry horse exhibition arranged for their benefit. The special fare for the round trip was fifty cents. The train left Manhattan at 11:35 A. M. and returned before 5 P. M. All report a good and profitable time.

There is a rumor afloat in the State that Capt. A. S. Rowan, professor of military science at this College, may be transferred to Topeka to be instructor of the Kansas National Guard. Several papers are joining in his boom, while the Captain says he has no official notice that he is to be transferred. The College wants him to remain here as long as possible.

The College is about to lose another one of its teachers. Prof. Ed. H. Webster has been appointed inspector and expert of the dairy division of the agricultural department, Washington, D.C. His salary will be \$2,000, which is \$650 more than he received here. Professor Webster is a graduate of this and the Iowa Agricultural College. He came here a year ago from the Continental Creamery Company, Topeka, and has made for himself an enviable record as a practical and energetic instructor. His new appointment dates from the first of March, but he has asked the department at Washington to be permitted to stay till the end of the present term.

The following is a schedule of games to be played by the College team the coming spring term on the home grounds. Arrangements are being completed with K. U. and Washburn for games. Three trips will be made by the team playing games with the State colleges and some of the institutions of neighboring states: April 15 and 16, K. C. Blues; April 21, Ottawa University; April 28, Bethany College; April 30, Kansas State Normal; May 9, Creighton University; May 11, Colorado University; May 13, Drake University; May 16, Nebraska University; May 21, Highland Park College; May 26, College of Emporia; May 29, Haskell Indians; June 8, Fort Riley.

The Gate City Journal, of Arkansas City, speaks of the work of the College delegation at the farmers' institute held lately at that place in the following handsome way: "At the evening session, Miss Agnew explained the advantages to students of the training of the hand and mind, and the opportunities open to students attending the Kansas State Agricultural College, to wholly or in part pay their way by working. Professor Walters, of the Agricultural College, then delivered an address on 'Gumption,' which was handled in that plain, pleasant, practical way of dispensing wisdom to his hearers, so characteristic of the professor, and which was highly appreciated by the audience. Wednesday morning, after a beautiful anthem, and invocation by Rev. Ralph Ward, came a very interesting address by Professor Walters on Bacteria; its Nature, and How to Prevent its Destruction of Vegetable and Animal Life.' At the afternoon session, 'A Talk on Soups,' by Miss Agnew, greatly interested the ladies.

The College consumed thirteen carloads, or five hundred fourteen and one-half tons, of coal from the penitentiary mines during the month of February, and paid the railroads for its transportation, \$669.92. This item will explain why the College asked the legislature to appropriate \$3500 per year for freight and drayage.

The Empire Separator Company delegation to the dairy association, some twenty members strong, came in from Salina, on Wednesday, carrying a big banner and marching through the streets with the characteristic yell of "Empire! Empire! What is that? That's what gets the butter fat. If you will try, you will see; it's a skimmer from A to Z."

The several programs of the Kansas State Dairy Association were enlivened with music furnished by the Musical Department of the College, consisting of selections by the College band, the College orchestra and a vocal selection by the Euterpean Quartet, Misses H. Hofer, C. J. Perry, C. Hofer, A. Perry, and Lora Perry, accompanist; a piano solo by Miss Ethel Smith; two violin solos by Mr. George Shank and sister, accompanist; a piano duet by Misses B. Mudge and E. Fearon and two violin solos by Mr. R. H. Brown.

The State Dairy Association met at the College last week, with a large attendance from all parts of the State. In fact, the city and the College were full of dairymen, creamerymen, and representatives of dairy supply houses. Many parents or friends of students had taken advantage of the low railroad rates to visit The published program was carried out to the letter, and all the meetings, even the evening meetings, were well attended, though the weather and the roads were unfavorable. In order to give the members of the association a chance to attend the dairy stock judging school in the College arena, there were no afternoon sessions held. The butter and cheese exhibit in charge of Prof. E. H. Webster was well patronized. The silver cup prize went to A. Larson, of Topeka, whose tub scored 951, and who took the prize last year. Officers for another year were elected as follows: President, George Littlefield, Parsons; secretary and treasurer, T. A. Borman, of Topeka; assistant secretary and treasurer, Charles Dille, Ottawa. The convention, by resolution, indorsed Edward Sudendorf for the position of dairy commissioner at the World's Fair at St. Louis, and also declared in favor of a State fair for Kansas.

ALUMNI AND FORMER STUDENTS.

R. C. Mitchell, apprentice and sophomere two years ago, has entered the navy as a machinist and will shortly sail for China on the U. S. S. Wisconsin.

W. H. Steuart, '95, took advantage of the dairy convention to visit the College for the first time since his graduation. He is farming near Winchester, is married, and has a fourteen-months' old daughter.

Lieut. R. B. Mitchell, '99, has been transferred from Fort De-Soto, Fla., to Fortress Monroe, Va.

S. W. Williston, '72, professor of paleontology in the University of Chicago, has received a grant from the Carnegie institution for a monographic study of the plesiosaurus.

Invitations are out for the marriage of Amy Manchester, sophomore in 1898, to Ira Crawford. The wedding will be at the home of the bride's parents, Chiles, Kan., March 10, 1903, at 8 o'clock P. M.

M. A. Limbocker, '95, writes to Professor Walters from Pomona, Kan., where he is cashier of the Citizens State Bank: "I have charge of the bank here—in fact, conduct it—and business has been all I could ask in the seven months I have been here."

M. F. Hulett, '93, is the subject of a complimentary notice in the Columbus, Ohio, Citizen. Mr. Hulett is the most prominent osteopathist of Columbus. He is serving his third term as treasurer of the American Osteopathic Association. He is also a member of the state osteopathic examining committee required by the law passed at the last general assembly, providing for the regulation of the practice of osteopathy in Ohio.

The laboratory of plant breeding of the United States department of agriculture is undertaking an extensive series of tests of varieties of corn in connection with several of the experiment stations. These experiments will extend over five years and have for their object the discovery of the varieties best adapted for use as foundation stocks in improving and developing varieties. The carrying out of these experiments will be in charge of C. P. Hartley, '92, one of the officers of the laboratory of plant breeding.

Westerleigh Institute, Staten Island, New York, was destroyed by fire, February 19. This is a private school in which J. B. Dorman, '96, is teaching chemistry. Mr. Dorman was in the top story and did not hear the alarm. He was the last one out of the building, and had a narrow escape. Another teacher on the top floor was cut off from the stairway, and badly injured by jumping to the ground. Mr. Dorman, in addition to his teaching had been doing some special work in chemistry, which will be interrupted by the calamity.

The Capital reprints from the Brooklyn Eagle, an extended notice of the work that Miss Florence Corbett, '95, has undertaken as consulting dietetician for the Commissioner of Charities. The article is too long to quote entire, but the last paragraph may be given, in which Miss Corbett says: "I am interested in my work. I do not like to talk about it because wonderful, sensational results will be expected. We do not promise anything of the sort. We do not promise any changes even. But something will be accomplished through all this study. What I am trying now to get at, under the commissioner's directions, is to see if the present system is the very best possible, if improvements can be made in it."

F. W. Ames, '94, and Ethel Patten-Ames, '95, are rejoicing in the birth of a daughter, February 22, 1903. Their twin boys, now nearly three and one-half years old, are as healthy and lively a pair as can be found in the land. Mr. Ames is with the National Steel Company, Pittsburg, Pa., and retains a lively interest in the welfare of the College.

Electrician Sergeant S. R. Kimble, U. S. A., is home on a twenty-day furlough visiting his parents, Judge and Mrs. Sam Time is flying very rapidly, and the many Manhattan people who knew Rob Kimble about two years ago are glad to meet the broadshouldered artillery officer into which he has Sergeant Kimble won, by competitive examination last June, the appointment to the special army electrical engineering course in the military training school at Fort Totten, New York, and finished the course December 31 last, standing first in the class; by orders of the war department he has since been transferred from his old cavalry regiment to the artillery department and now holds warrant as electrician sergeant. As soon as his furlough expires his orders are to report back to Fort Totten, there to serve as first assistant instructor in the school from which he has just graduated with first honors. Rob was a third-year student in the K. S. A. C. at the time of his entering the army two years ago, and feels that he owes much of his success to the training he first gained at his home College. Our people congratulate both Rob and his parents on his success, and greatly enjoy his visit to the old home. - Nationalist.

Prof. F. A. Waugh, '91, formerly assistant in the Horticultural Department of this College, and at present professor of horticulture in the Massachusetts Agricultural College, writes a very interesting letter to Professor Walters, from which we cull the following short paragraph: "I always took a special interest in orthographic and perspective projection, and have made use of what I know on these subjects. It may please you to receive my opinion that they were among the most useful of all subjects which I followed in my College course. Just at present I am building up a rather extended course in landscape gardening, which includes a large amount of drafting and mapping, and some projection and perspective drawing. We have under way the fullest, and I hope the best, course in landscape gardening ever given in America. It is arranged so that our four-year men can take the last two years with practically nothing else. They get two solid years of landscape work, including the study of plants, principles of design, practical surveying, mapping, engineering, and everything necessary to make them practical landscape gardeners. They have a half year of horticulture, a half year of surveying and a half year of drawing before they get to this point." The letter speaks in detail of the methods of teaching many of the branches and ends by saying: "When you have some ambitious students who want to follow landscape gardening, you can send them to Massachusetts Agricultural College and be sure they will get what they are after."

KANSAS SWINE BREEDERS' ASSOCIATION.

Following is the program for the special session of the Kansas Swine Breeders' Association to be held at Manhattan, Kan., March 12 and 13, during the week of the swine judging at the Kansas State Agricultural College:

THURSDAY EVENING, MARCH 12, 7 O'CLOCK.

The Berkshire—History and Standard of Excellence, Emporia.	•/	G. W. Berry
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FRIDAY EVENING, MARCH 13, 7 O'CLOCK.

The Rearing and Caring for Brood Sows,		•	Thompson Brothers
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Note.—The papers in the foregoing program will be subject to pertinent discussion, and swine breeders are urged to be prepared. The judging of swine by the students of the Agricultural College under the tutelage of a competent expert will be in progress during the entire week of March 9 to 14, and the College management have promised a slaughter and cooking test to which all breeders of swine are invited, and it is hoped the swine breeders of the State will attend both the judging school and the meeting of the association, and thus assist by your presence and counsel to place the business of swine breeding upon that higher plane which by reason of its importance it should justly occupy.

A number of telephone men met at the office of the Manhattan transfer line to perfect an organization to be known as the Union Telephone & Telegraph Company, with a capital of probably \$150,000. A preliminary meeting was held at Beloit on February 4. No officers were elected here, but another meeting will be held soon. The following men were present: T. W. Daugherty and Geo. G. Hill, of Concordia; W. W. Dilworth, A. T. Rodgers and F. M. Daity, of Beloit; Geo. Rodgers and C. L. Brown, of Abilene; F. L. Flint, Minneapolis; T. W. Dorn, Junction City, and H. L. Pierce, Belleville. The object of this company is to build three full metallic trunk lines between Abilene and Topeka, to connect with other lines between there and Kansas City. Work will probably begin before May 1.—Mercury.

FISTULOUS WITHERS AND POLL-EVIL.

(Press Bulletin No. 121, issued by the Veterinary Department.)

Fistulous withers, often called "thistelow," is a running sore that follows the formation of an abscess or "gathering" in the region of the withers of horses, or in the upper part of the neck just in front of the withers. A poll-evil is a similar condition occuring in the region of the poll.

CAUSES.—Fistulous withers and poll-evil are caused by specific germs gaining entrance to the system probably through the food or water, and locating in the regions above decribed, where they cause pus or matter to form and thus produce an abscess. It is possible that they may be caused or aggravated by local injuries such as blows or ill-fitting collars or saddles, or from hitting the poll against the ceiling, or from pulling on a halter.

SYMPTOMS.—At first there is a diffuse swelling of the withers or poll, usually on one side or the other; this swelling is often tender and causes some stiffness in the muscles of the part. Later the swelling becomes more prominent in some part, softens, and, unless opened, breaks and discharges pus or matter. The sore thus formed is lined with a smooth "false membrane" that secrets pus and is very difficult to heal. Sometimes a fistula of the withers, or poll-evil, will discharge for a year or two and frequently causes the death of the animal.

TREATMENT.—In the early stages it is often possible to cause their absorption or "scatter" them by bathing the affected part with hot water, rubbing and kneading the parts thoroughly and applying a stimulating liniment such as the following: Strong ammonia, one ounce; turpentine, one ounce; water, one ounce; linseed oil, five ounces. This should be applied once daily until the skin begins to get sore when it can be withheld for a few days and repeated. Application of tincture of iodine, and blisters, are also used to "scatter" fistulæ and poll-evil.

After much pus or matter has accumulated it is impossible to "scatter" them, then they After much pus or matter has accumulated it is impossible to "scatter" them, then they should be opened freely with a knife; good surgeons often dissect them out, at least so far as is possible. The incision should be made as low down as possible to give free drainage. In most cases a cavity will be found with one or more "pipes" extending into the tissues. In case the bones of the withers are ulcerated they must be removed surgically. The cavity should be thoroughly cleaned out and kept clean, all pieces of diseased tissue removed and the cavity dried by swabbing out with absorbent cotton. Pure tineture of iodine should be injected once daily after cleaning and drying. A solution of one part of carbolic acid in twenty-five parts of water is good to clean it out. Pure turpentine can be used in place of iodine with good results in some cases. iodine with good results in some cases.

Another method of treating after opening is to thoroughly swab out the inside of the cavity and "pipes" with a good ilquid caustic such as butter of antimony. In place of a swab, rags saturated with butter of antimony can be packed in the cavity and "pipes;" they should be removed in a few minutes. This destroys the "false membrane," which sloughs out in a day or two. The fistula should be washed out daily, a four per cent solution of carbolic acid used, and the parts kept clean. In using a caustic it should be used once carefully and thoroughly. Repeated use of caustics is injurious, and strong caustics should be used with caution. Rubbing with liniment or applying a light blister about the diseased part is often useful in assisting the healing process. Other good solutions used to inject into the cavities for cleaning and healing are: Corrosive sublimate one part, water one thousand parts; blue vitriol, pulverized, one teaspoonful dissolved in a pint of water, or a one per cent solution of creolin or similar coal tar products.

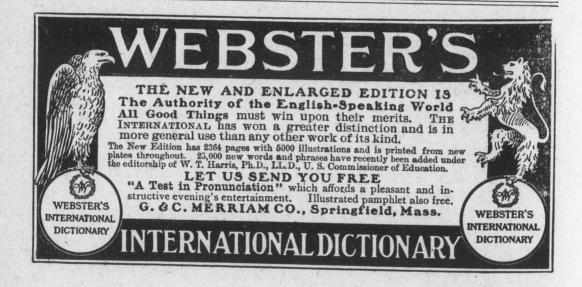
In treating these diseases, a good syringe with a long nozzle that can be inserted into all

or similar coal tar products.

In treating these diseases, a good syringe with a long nozzle that can be inserted into all parts of the fistula, is essential. Showering the part once daily with cold water, with considerable force from a hose, and then rubbing briskly until it is dry, is often beneficial. It is important that the fistula should heal from the bottom; if the outside opening is allowed to close before the cavity has healed it will break out again.

Animals with a fistula or poll-evil should be well fed with nutritious food, and salted frequently. A tonic condition powder is often very useful. The following is good: Sulphate of iron, one ounce; hyposulphite of soda, one ounce; saltpeter, two ounces; Nux vomica seed, one ounce; Gentian root, two ounces. All should be well pulverized and mixed. A heaping teaspoonful can be given in the feed twice daily.

N. S. Mayo.



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MANHATTAN, KAN., MARCH 17, 1903.

No. 22

TO PREVENT THE DRIFTING OF THE SOIL BY WIND.

(A paper prepared for the North Dakota farmers' institute report of 1902.)

TN parts of this state, especially on the lighter soils, the fields and crops may be greatly damaged by the drifting of the soil caused by heavy winds. In a dry spring, while the soil is still mellow and loose, as it is left by the winter's freezing, strong, dry winds sometimes cut off or cover with soil, or sweep entirely away, crops of young grain, and at the same time, drift away much of the rich surface soil from unprotected fields. As the country settles up, and the fields are fenced, and groves and hedges are planted, this damage by strong winds grows gradually less. Meanwhile, we may protect our fields to a great extent from the destroying effects of the wind by a proper cultivation of the land and rotation of crops.

CULTIVATION TO PREVENT BLOWING.—In the dry season of 1900, an experiment was undertaken at the North Dakota station in cultivating fall-plowed land with different tools in order to observe the effect upon the blowing of the soil. The piece of land chosen for the experiment was about forty rods wide, and extended north and south across the west side of the northwest quarter of the section. In 1899, the west half of this strip was planted with potatoes, the north half of the east half of the strip was in millet, and the south half of the east half was in oats. land was all fall plowed in 1899.

On April 7, 1900, the field was divided into five plots, beginning at the north end of the piece, which were cultivated as follows: Plot 1 was pulverized with a disc harrow. Plot 2 was cultivated with Nash's Acme harrow. Plot 3 was harrowed with a springtooth harrow. Plot 4 was harrowed with a peg-tooth smoothing It was intended to leave plot 5, at the south end, uncultivated, but through a misunderstanding this plot was also harrowed with the smoothing harrow. The soil was dry and loose and in excellent condition to cultivate, and was left rather fine and pulverized by all of the tools. It was observed that the

disc harrow cultivated the ground about three inches deep, and left the soil furrowed and a little more broken and cloddy than any of the other tools. The Acme harrow left the soil fine and slightly furrowed, and loosened about two inches deep. The spring-tooth harrow left the ground well furrowed and quite fine, not cloddy, and loosened the soil to the depth of three inches. The smoothing harrow furrowed the ground very slightly, leaving the surface fine and smooth and not stirred more than one to two inches deep.

On April 26, there was a strong wind from the south and southwest which drifted the soil more or less on neighboring fields. Observations made April 28 showed that the soil on plot 1, pulverized with disc harrow, had not blown at all. On plot 2, cultivated with the Acme harrow, there had been considerable drifting of the soil. The young oats in a field bordering the east edge of this plot had been cut off and damaged by the drifting soil over a strip several rods wide. There was no noticeable drifting of the soil from plot 3, cultivated with the spring tooth harrow. The soil drifted from plots 4 and 5 more than from any of the other plots. The oats at this end of the field were cut off and badly injured nearly across the oat field, forty rods wide.

It was observed also at this time that the soil of the oat field drifted badly all along the southern and eastern sides of the field. This land was fall plowing, which had received only surface cultivation with the smoothing harrow before sowing. A forty-acre field of wheat just south of the oat field which was disc pulverized and harrowed before seeding did not blow at all. In another field, a part of the ground had been cultivated with a disc harrow and another part left uncultivated. The soil on the uncultivated portion was drifted by the wind, while that part cultivated was not affected.

In the spring of 1901, I stopped the blowing of an uncultivated field by starting the disc harrow on that portion where the drifting was taking place.

From the above experiments and observations, it would appear that as a preventive of soil drifting the disc and spring-tooth harrows are the best tools with which to prepare fall-plowed land to receive the grain. It is a general observation that spring-plowed land does not blow, at least not for a considerable time after plowing. The stirring of the ground with the disc or spring-tooth

harrow approaches in character a spring plowing. The ashy, loose, disintegrated portion of the soil left at the surface by the winter's freezing and thawing is turned under and the coarsergrained soil, which contains more moisture and which holds together better, is brought to the surface. More moisture is also retained in the soil and in the loosened portion by the deep cultivation, because of the greater thickness of the soil mulch.

When fall-plowed land is simply surfaced with a smoothing harrow, the loose, disintegrated part remains in place at the surface; also the ground being loosened to a less depth is dried out more rapidly and more completely by a strong, dry wind, and soon loses its adhesive quality and is easily blown away, often to the depth to which it has been loosened with the harrow. The level, smooth character of the field prepared with a smoothing harrow also has a tendency to favor blowing, while a furrowed surface breaks the force of the wind.

In the season of 1901, an experiment was undertaken in order to observe the effect upon the wheat crop, when the seed bed was prepared with the several different tools. The results of the single trial are given in the following table:

CROP OF 1901.

Tool used in pre- paring seed bed.	Number of times culti- vated.	Yield per acre bushels.	Increase of yield by cultivation bushels.
No cultivation Peg-tooth harrow Disc harrow Spring-tooth harrow.	0	20. 5	
	1	21. 2	7
	2	22. 3	1.8
	1	22. 3	1.8
	1	22. 9	2.4

The land which received no cultivation before seeding gave the smallest yield of wheat. The largest yield was secured from the plot which was prepared with the Acme harrow, the next largest from the ground prepared with the disc harrow. The plots prepared with the disc, spring-tooth and Acme harrows have each made nice gains over the plot prepared with the smoothing harrow, enough in each case to fully pay for the extra work. It pays to cultivate the ground before seeding, and it pays to use a heavier tool than the common harrow.

ROTATION OF CROPS TO PREVENT BLOWING.—The following is quoted from Bulletin No. 43, the North Dakota Station, page 541: "When the wild prairie is first broken, the soil is mellow, moist,

and rich, producing abundant crops. After a few years of continuous cropping and cultivation, the physical condition of the soil changes; the soil grains become finer; the soil becomes more compact and harder to handle; it dries out quicker than it used to; bakes worse, and often turns over in hard clods and lumps when plowed. This compact texture and bad mechanical condition of the soil make it difficult for the young roots to develop properly, causing at the same time an insufficient supply of air in the soil, which is almost if not equally as detrimental to the crop as an insufficient supply of moisture. After a soil has been cultivated and cropped a long time it tends to run together and is very stickey when wet, but when dry the adhesive character disappears almost entirely. The grass roots which formerly held it together are decayed and gone, and now when loosened by the plow it is easily drifted and blown away.

"The perfect tilth and freedom from clods so characteristic of virgin soils is always more or less completely restored whenever land has been laid down to grass for a sufficient length of time. After the ground is covered with sod, the puddling action of rain is prevented. As the roots grow, the soil particles are wedged apart in some places and crowded together in others, and by means of lime or other materials, the small soil grains become cemented into large ones, and thus the open and mellow character of virgin soil is restored—and not only by this, but by the accumulation of plant food in the roots, the soil is made more fertile for succeeding crops."

If a large field, as a section or a quarter-section, be divided into several fields extending east and west across the large field, and each one of these strips be planted to different crops each season, the different crops and the condition of the land produced by rotation of crops will prevent the blowing and drifting of the soil to a large extent. The force of the wind in blowing across a field of grass will be lessened and the moisture which the air gathers from the grass in its passage will cause it to be less drying, as it passes over the plowed or fallow land beyond the grass. Rotation of crops also, where grass is introduced, will soon put the soil into the proper physical condition, which will prevent blowing.

A. M. Teneyck.

SOME DISTINCTIONS.

Castory is the impassioned outpouring of a heart—a heart full to bursting. It is the absolute giving of soul to soul. . . . Oratory is the ability to weld a mass of people into absolutely one mood. To do this the orator must lose himself in his subject—he must cast expediency to the winds. And more than this, his theme must always be an appeal to humanity. Invective, threat, challenge, all play their parts, but love is the ever recurring theme that winds in and out through every great sermon or oration. . . . When Sophocles pictures the god Mercury seizing upon the fairest daughter of Earth and carrying her away through the realms of space, he had in mind the power of the orator, which through love lifts up humanity and sways men by a burst of feeling that brooks no resistance."

I quote this extract because it is a rare instance of an understanding of the true meaning of oratory. So many think of oratory, elocution, public reading, impersonation and expression as being different names for the same thing. It is the purpose of this article to point out clear distinctions between these and to show the relations which all bear to the study of expression. Oratory is the eloquent, sincere, earnest and dignified delivery of worthy thought. Its purpose is to persuade, to convince, to arouse, to move one's hearers. An oration having these characteristics will be didactic and philosophic; it will enlighten and instruct; it will be just and deliberative; it will hold fast to the good and show forth that which is right; it will be indisputable and above contradiction; it will convince and arouse to resolution A good oration properly delivered contains all the elements of a simple conversation upon any subject of importance, The essential eleenlarged to suit the theme and the occasion. ments of good delivery are earnestness, sincerity, simplicity, animation, clearness, definitness, distinctness, directness, freedom, ease, harmony and spontaniety, all combining with thought and purpose into a unity that carries with it the weight and dignity of authority, the sublimity of emotion and the divinity of passion. Daniel Webster said: "He is an orator that can make me think as he thinks and feel as he feels."

Reading is the act of perusing the words of a written or printed page. It may be to oneself or to another. Ordinarily in

reading to oneself, whether silently or aloud, the purpose is to ascertain the thought. In reading to others the purpose is to reveal the thought. Reading, in so far as it refers to the public and formal rendering of a production, is synonymous with recita-Even though the lines are committed to memory and given, it is still reading. This is what is commonly and mistakenly called elocution. Elocution refers to the technique of delivery. It is the style or manner of revealing thought. It has to do with the mechanical training of the means of expression—the mind, voice and body. Elocution is no more the finished product than the exercises through which the trainer puts the horse is the race. Neither is the imitation of the calls of animals or birds Elocution bears the same relation to delivery that elocution. the exercises practiced upon the piano bear to music. cludes all of the exercises for the training of the mind, voice and body to become flexible and responsive to the slightest variation of thought.

Public reading is one of the highest of arts, and is, strictly speaking, the interpretation of literature, or the delineation of characters. It is suggestive and not representative. voice and body are responsive to the action of the mind, and just to the extent that the mind grasps the thought is the reader capable of experiencing within himself the situation, and to that extent only will the voice and body naturally respond with emotion. true interpretation or expression of thought is spontaneous and no amount of training, or forcing, or repetitions of premeditated actions, can ever cause the result that will come from yielding to an idea until it dominates mind, voice and body and expresses itself. Representation has no part in reading, but belongs to the stage and to some forms of impersonation. Naturalness is the requisite of good reading, and when the attention of the auditor is drawn away from the thought, to the speaker and his mode of delivery, it is not natural.

Impersonation is ordinarily understood to mean imitation. This is not a true definition of the term. Imitation means to pattern after, or to do a thing like another does it. Impersonation means to assimilate and make a part of one's own life. If one is to impersonate a "Yankee" he meditates upon the characteristics of all "Yankees" until he thinks like one and is one during the delineation. In imitation some particular person or thing is held

outside of the mind as a model, and an effort is made to be like the model outwardly. In impersonation the character, the thought, the very life are all within the mind and are a part of the impersonator, and so reveal themselves through the agents of revelation—the mind, voice, and body.

Expression is the revelation or manifestation of thoughts, feeling, and emotions. It is "a physical act resulting from psychic activity." We often hear such remarks as, "He puts so much expression into his speaking," or "She didn't have enough expression," thus separating expression, thought, voice and gesture or pantomime, while in truth they are all one. Expression is the thought; it is the voice; it is the pantomime. It is not the cause or a part of the result, but the result itself. It is the turning of the mind inside out, so that the thought within may be seen and understood. It is simply transparent thinking. Every volitional act is an act of expression, resulting from an action of the mind, and we express exactly what is in the mind. "The mind, being master, compels the body, its servant, to make the proper manifestations. Whereas the process is reversed if the beginning is made with pantomime and vocality, and a struggle is made to get the peripheric agents, the bodily members, to rule and direct the central principal, the mind." The instant the circumference seeks to control the center of the human circle, awkwardness and affectation result. "Pantomime and vocality are the mechanics of elocution. A person may be expert in them and still be illiterate and uncultured. He must use his brains to utter words so that their meaning is rightly expressed." Muscular training will produce tone, but mental training and mental activity is required in the revelation of thought.

The study of expression is a necessary adjunct to study along any line where achievement is to follow. It belongs to every walk of life. The mechanic, the farmer, the merchant, the scientist, the artist, the teacher, the lawyer, the doctor, who gives the most thought to his work is the most successful, because he expresses more. Expression is living. "He lives most who thinks most." "It is only by labor that thought can be made healthy, and only by thought that labor can be made happy." W. O. CLURE.

SUBSTITUTE FOR HOUSE BILL NO. 362.

AN ACT making appropriations to the State Agricultural College for the erection and equipment of certain buildings, construction of water plant, for the purchase of lands, for maintenance, current expenses, and repairs, for the fiscal years ending June 30, 1903, June 30, 1904, and June 30, 1905, and to provide for fees to be charged students at said Agricultural College.

Be it enacted by the Legislature of the State of Kansas:

Section 1. The following sums, or so much thereof as may be necessary, are hereby appropriated to the Kansas State Agricultural College for the fiscal years ending June 30, 1903, June 30, 1904, and June 30, 1905, for the purposes hereinafter mentioned:

	1903	1904	1905
Water plant	\$10,000		
Chapel and equipment to seat 3000		\$40,000	
Contingent fund.		1,000	\$1,000
Creamery building and equipment		15,000	
Addition to shops			5 000
Purchase of land		10 500	5,000
Repairs (buildings and grounds)		10,500	
Current expenses		5,000	5,000
Current expenses		40,000	50,000
Farmers' institutes		2,000	2,000
Books and periodicals		1,500	1,500
Freight and drayage (coal)		3,500	3,500
vv ater-supply		1,500	
Salary State Veterinarian		2,000	2,000
rent, president's nouse		330	330
Dalary loan commissioner		300	300
near and power department.		3,000	3,000
Agricultural department		2,000	2,000
Animai nuspandry department		5,000	5,000
Medianical department.			
I hysics department		2,000	2,000
Chemical department.		2,000	2,000
Domestic science department.		2,000	2,000
Horticultural department		1,000	1,000
		1,500	1,500

SEC. 2. The auditor of State is hereby authorized to draw his warrants on the treasurer of State for the purposes and amounts specified in this act, or so much thereof as may be necessary to liquidate all such claims as may be presented to him, out of such appropriation; provided, that no amount shall be audited unless an itemized statement is furnished, verified by affidavit, showing that said appropriations are to be applied to the specific purposes only for which they were appropriated.

SEC. 3. In all cases in which by the provisions of this act appropriations are made for specific purposes named or causes stated, the officer or person having charge of such appropriations shall in no case, by any contract, act, or proceeding, obligate the State of Kansas at any time to pay a larger sum than is herein specifically appropriated.

SEC. 4. The erecting of the buildings provided for by this act

shall be by and under the direction of the Board of Regents of the Kansas State Agricultural College.

SEC. 5. The Board of Regents are authorized to purchase land for the use of the College, but no part of the appropriation made herein shall be allowed or paid by the auditor until a certificate is filed with him by the attorney-general showing that the land is free and clear of all encumbrances and that the State has a legal and valid title thereto.

SEC. 6. The following fees shall be charged each student at the State Agricultural College: Incidental fee, three dollars per term. To students residing in states and territories other than Kansas, the fees shall be as follows: Matriculation fee of ten

dollars, and an incidental fee of ten dollars per term.

SEC. 7. All moneys collected by the State Agricultural College under section 6 of this act shall be turned into the State treasury by the Board of Regents, and said fees so collected and paid into the treasury be and the same are hereby appropriated to the use of said Agricultural College, and the auditor of State is hereby authorized to issue his warrants on the State treasurer, upon proper vouchers being filed therefor.

SEC. 8. This act shall take effect and be in force from and after

its publication in the statue-book.

SENATE BILL NO. 337.

An Act making appropriation for the Experimental Station of the State Agricultural College, on the Fort Hays military reservation.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. That the following sums, or so much thereof as may be necessary, are hereby appropriated out of any moneys in the State treasury not otherwise appropriated, for current expenses, improvements and equipment of the Experimental Station of the State Agricultural College, on the Fort Hays military reservation:

and the selection of the	1903	1904	1905
Current expenses, including the salary of the	\$2,000	\$5,200	\$5,200
superintendent	2,000		
Dwelling-houses	1,000	2,000	
Live-stock experiments	,	1,000	
Horse harns		750	750
Cattle sheds and vards		700	700
Fencing	2,500		
Teams and equipment	2,000	1,000	1,000
Implements	1,500	2,000	
Water plant and skimming station		500	
Charle anaggings and hridges			
To coonerate with the United States depart	1,000		
ment of irrigation		1,750	
Thrashing machine and equipment		-,	

SEC. 2. The auditor of State is hereby authorized to draw his warrants upon the State treasurer for the several sums and purposes specified in this act upon verified vouchers approved by the Board of Regents of the State Agricultural College; provided, that all moneys derived from the sale of produce, commodities, or from any source whatsoever, shall be paid to the State treasurer, and the same is hereby reappropriated to the current-expense fund of the Experimental Station of the State Agricultural College, on the Fort Hays military reservation, to be paid out by the State treasurer on warrants issued by the auditor of State, on vouchers properly approved as aforesaid.

SEC. 3. This act shall take effect and be in force from and after

its publication in the official State paper.

HOUSE BILL No. 602.

An Act relating to State educational institutions, making an appropriation therefor, prescribing the manner of paying the faculties thereof and teachers and employees therein, together with any appropriations for buildings and repairs, and interest and endowment, abolishing the position of treasurer in the board controlling the same.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. The position of treasurer in every board of regents, trustees or managing officers controlling any State educational institution is hereby abolished. The faculty of each such institution and the teachers and employees therein, and all special appropriations for buildings and repairs, interest and endowment, shall be paid in warrants drawn by the auditor of State upon the State treasurer, at such times as may be determined by the board of regents, trustees or managers in control, upon verified vouchers approved by the board of the institution, or by such officer or officers as the board shall direct.

There is hereby appropriated to the State University, the State Agricultural College and the State Normal School each the sum of five hundred dollars for the fiscal year ending June 30, 1904, and five hundred dollars for the fiscal year ending June 30, 1905, to be drawn and used by the president or chancellor for contingent expenses. The auditor of State shall issue warrants therefor on the State treasurer, on verified vouchers of the president or chancellor. The president or chancellor shall report monthly to the auditor of State, on oath, showing the disposition made of the fund so drawn for the previous calendar month.

SEC. 3. All acts and parts of acts in conflict herewith are

hereby repealed.

This act shall take effect and be in force on July 1, 1903, after its publication in the statute-book.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

PRES. E. R. NICHOLS......Editor-in-Chief PROF. J. D. WALTERS.....Local Editor PROF. J. T. WILLARD......Alumni Editor

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LOCAL NOTES.

E. W. Bemis, formerly a professor at this College, and now located at Cleveland, is in Topeka to testify in the dollar gas case. Mr. Bemis has a national reputation as a gas and waterworks expert.

Prof. W. A. McKeever gave an address at Valley Falls, Sunday evening, before a union meeting of the churches. Professor McKeever was a member of the graduating class of the high school there in 1888.

Professor Webster leaves to-day on a trip to Topeka, Kansas City and St. Louis. At the latter he will represent the dairy division of the department of agriculture, Washington, D. C., at a breeder's conference held in the interest of the live stock division of the World's Fair of 1904.

Geo. O. Learned, of last year's short course in agriculture, writes to Professor Walters, from Stafford, Kan., that he "took unto himself a wife who is willing to help all she can and who knows what life is." He is expecting to build a new house on his farm this year and is busy planting trees and evergreens on his new home lot.

The undersigned parents of the deceased P. B. Schmidt, and his brothers and sisters, express their heartfelt thanks to all who assisted in the discovery, care and transportation of the body of their dear son and brother, and whose service of love and words of sympathy have lightened the heavy trial. May God reward the kindness of everyone.—Peter D. Schmidt, Agaretha Schmidt.

On the last day of the session of the legislature Governor Bailey sent the following appointments for the Board of Regents of the State Agricultural College to the senate for confirmation. Capt. J. S. McDowell, of Smith Center, to succeed himself; C. E. Friend, of Soldier, Jackson County, to succeed Senator S. J. Stewart, of Allen county; E. T. Fairchild, of Ellsworth, to succeed himself; J. W. Berry, of Jewell City, to succeed William Hunter, of Blue Rapids; J. O. Tulloss, of Sedan, Chautauqua county, to succeed J. M. Satterthwaite, of Butler county. R. J. Brock, of Manhattan, was appointed a few weeks ago, upon the resignation of F. D. Coburn. The terms of Regents McDowell, Brock and Friend expire in 1905; those of the others in 1907. Four of the members—Brock, Friend, Berry, and Tulloss—are alumni of the College. The new Board is a strong one and very satisfactory to the Faculty.

ALUMNI AND FORMER STUDENTS.

Oscar Otten, '95, telegraph operator at Steiner, Neb., has been promoted to the superindent's office at Fairbury, Neb.—Herald.

A. T. Kinsley's ['99] address is Independence, Mo., where he is practicing his profession, that of a veterinarian. Mr. and Mrs. Kinsley send best regards to their many College friends.—*Herald*.

Myrtle Mather, '02, has been appointed teacher of dietetics in Brokaw Hospital, Bloomington, Ill. Her duties begin April 1. Miss Mather is well qualified by education and experience for this work, and her friends wish and expect for her abundant success.

Nellie S. Kedzie-Jones, '76, is not being allowed to entirely abandon the field in which for so many years she worked with such distinguished success. Recently she conducted a series of cooking lessons in connection with the state farmers' institute of Illinois.

Miss Stella Stewart, '00, is attending the Clark school in Northampton, Mass. She is enjoying her work very much and thinks that the East is a beautiful place in which to live. Miss Stewart had quite an honor one week in being selected out of five trainers to be a substitute for one of the teachers in the school.—Herald.

From the Capital we clip the following concerning J. T. Pringle, student in 1881: "Brandon, of Butler, one of the members of the 'republican minority' in the house, yesterday introduced the following resolution, endorsing Speaker Pringle's record as presiding officer, which was adopted by a standing vote: Whereas, the Hon. J. T. Pringle, speaker of the house of representatives, has presided over the deliberations of this session with skill, impartiality and fidelity; therefore be it Resolved, That the house of representatives extend to the Hon. J. T. Pringle its thanks for the pleasing and satisfactory manner in which he has discharged the duties devolving upon him, and for his uniformly courteous treatment of the members of this house."

THE ALUMNI MEMBERS OF THE BOARD OF REGENTS.

The alumni are certainly honored by Governor Bailey in his selection of Regents for the College. With the exception of Regent W. H. Phipps, '95, who served from June, 1898, to February, 1899, the alumni have never been recognized by appointment on the Board. Now we have four.

James W. Berry, '83, of Jewell City, is the senior member of the quartet in respect to date of graduation. He has shown his ability by successfully establishing a large business as a contractor and builder, and as a dealer in lumber. He also has other important interests in industrial lines. Mr. Berry constructed the stone work of Physical Science Hall, which will stand for centuries if not destroyed by fire or earthquake, and is a monument

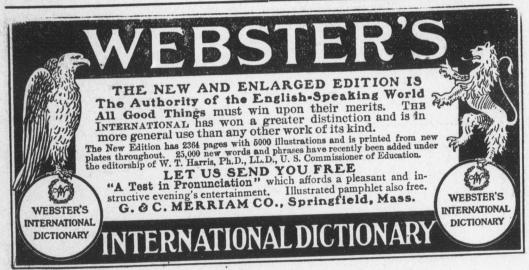
that any of us might envy him. His experience in construction will make him an especially valuable man on the Board in view of the constant additions that are being made to our buildings.

Carl E. Friend, '88, of Soldier, has also made a distinguished success of business as a lumberman and a banker, and as important business interests are constantly at stake in the management of the College, his experience will be very valuable.

Robt. J. Brock, '91, of Manhattan, is probably the most widely known in the State of any of the four. He is a lawyer of ability and boldness, and is full of enthusiasm for his alma mater. Being appointed last January, he has already had some opportunity to show good service in securing favorable legislation, and his diligence in this has not disappointed his best friends. As a legal advisor Mr. Brock will be of special service, and his large acquaintance in the State, and local residence, will naturally make him an important and influential member.

J. O. Tulloss, '99, of Sedan, was graduated so recently that he has not had time to show all there is in him. He has, however, been conducting a hardware business successfully, and is thoroughly in sympathy with the legitimate aims of the institution. He will make a good Regent, and will have a knowledge of more recent events and conditions here that will enable him to very effectively assist in the solution of problems that may arise.

Of them all, it can truly be said, they were good students, are strong men, and will make efficient Regents. Being a majority of the Board, the institution is certainly in the hands of its friends, a truth doubly assured when we realize that in the reappointment of Regents Fairchild and McDowell the College retains the services of two good men who have been very influential in guiding its destinies for the last four years. Congratulations are due the alumni, the Board, the College, the State, and especially to Governor Bailey, a college man himself, and a farmer in thorough sympathy with "the liberal education of the industrial classes in the several pursuits and professions of life."



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SOME MODERN PRINCIPLES IN CROSS-BREEDING.*

ROM 1859, when there appeared the first edition of Darwin's monumental work "On the Origin of Species by Means of Natural Selection; or the Preservation of Favored Races in the Struggle for Life," until 1900, there had been no sensible advance in the study of evolution. Much of this period had been occupied So fully did his doctrine of natural seby the battle for Darwin. lection appear to explain the facts of development, and so occupied had the men of science been with the new work which this theory immediately inspired and suggested, that none had been found to wander far into new paths or to inquire deeply whether there might not be other ways whereby species originate than through the slow elimination of unfit characters in the struggle for existence and the survival of individuals most favorably equipped. Darwin himself, in fact, in the introduction to his "Origin," says: "I am convinced that natural selection has been the most important, but not the exclusive means of modification."

In 1901 there appeared a work by Prof. Hugo de Vries, of the University of Amsterdam, entitled "The Theory of Mutation, Experiments and Observations on the Origin of Species in the Plant Kingdom." It was my original intention to discuss this theory and to show what light it throws on the practical operations of plant breeding, following with a discussion of recent work in the field of hybridization. On account of limited time it will be impossible to do this, and it will be necessary to confine the discussion to the latter topic alone.

Perhaps no phase of the evolution question has possessed more unsolved mysteries than that of hybridization. If the doctrine of organic evolution in general has until recently been left as Darwin propounded it, the particular problems in evolution which cross-breeding involves were, in 1900, but little nearer a solution than

^{*}Read at the thirty-sixth annual meeting of the Kansas State Horticultural Society, Topeka, Kan., December 31, 1902.

when Kölreuter began his researches in the eighteenth century. Even Darwin's enormous labors, witnessed in his "Origin," and in his later work, "The Effect of Cross- and Self-fertilization in the Vegetable Kingdom," had not been sufficient to solve the riddles of hybridization. There had been a vast accumulation of facts. Observations in this fascinating field had been plentiful, but no general laws had been discovered, no clews to guide one through the maze of confused and conflicting data.

As a matter of fact, scientific men for the most part had abandoned the field of hybridization as a hopeless and fruitless region for inquiry. Without even a good working hypothesis from which to start, investigation is manifestly time thrown away. It has therefore come about that recent observations and experiments in cross-breeding have been conducted almost entirely by the commercial growers, who have worked without any theories, and with no intention of solving scientific problems, and unfortunately, also, for the most part without keeping records of their experiments.

Such was the condition of things in 1900 when the papers of Gregor Mendel were discovered, and it is to his work and to what is known as Mendel's law that I wish to call your attention.

Mendel's observations covered the eight years preceding 1865, being contemporary with the early work of Darwin, with which he was familiar, although it does not appear that Darwin ever heard of Mendel. His paper on "Experiments in Plant Hybridization" was read before a local society of naturalists in the town of Brünn, Austria, at meetings held in February and March of 1865, and was published in the transactions of this society in 1866. His second paper appeared in 1870, in the journal of the same organization.

It is an amazing fact, realizing as we do to-day the tremendously epoch-making nature of Mendel's discoveries in regard to hybrids, that his work attracted absolutely no attention in the scientific world from 1865 until 1900, when de Vries in Holland, followed in rapid succession by Correns in Germany and Tschermak in Austria, announced the discovery of his papers in connection with the publication of investigations of their own on the same subject.

Mendel himself, from 1870 until 1884, when he died, made no further important contributions to science. Taking into consid-

eration the scholastic nature of his training, and his occupation as abbot in a Catholic monastery, it is indeed surprising that this peculiar field of biology should have attracted him; but given the attraction, one can perhaps see in the calm and retired life that was probably his, a superior opportunity for concentrated and exhaustive study of the problem.

It may be of interest to know that Mendel's first paper was originally translated into English for the Royal Horticultural Society, of England, and that both his papers are now available in a book recently published by Macmillan's, entitled "Mendel's Principles of Heredity," by W. Bateson, M. A., F. R. S., himself an investigator of the first rank in this field.

Let me quote from Mendel's introductory remarks: "Experience in artificial fertilization, such as is effected with ornamental plants in order to obtain new variations in colour, has led to the experiments which will be here discussed. The striking regularity with which the same hybrid forms always reappear whenever fertilization took place between the same species induced further experiments to be undertaken, the object of which was to follow up the developments of the hybrids in their progeny. To this object numerous careful observers, such as Kölreuter, Gärtner, Herbert, Lecoq, Wichura, and others, have devoted a part of their lives with inexhaustible perseverance. Gartner especially, in his "Die Bastarderzeugung im Pflanzenreiche" (The Production of Hybrids in the Vegetable Kingdom), has recorded very valuable observations; and quite recently Wichura published the results of some profound investigations into the hybrids of the willow. That, so far, no generally applicable law governing the formation and development of hybrids has been successfully formulated can hardly be wondered at by any one who is acquainted with the extent of the task, and can appreciate the difficulties with which experiments of this class have to contend. A final decision can only be arrived at when we shall have before us the results of detailed experiments made on plants belonging to the most diverse orders. Those who survey the work done in this department will arrive at the conviction that among all the numerous experiments made, not one has been carried to such an extent and in such a way as to make it possible to determine the number of different forms under which the offspring of hybrids appear, or to

arrange these forms with certainty according to their separate generations, or to definitely ascertain their statistical relations."

It was the recognition of the three points last mentioned that set the work of Mendel apart from that of all others, and indeed, as Bateson says, this conception was new in his day. Nor does it seem to have occurred to subsequent investigators, until the discovery of Mendel's papers, that these criteria lay at the basis of the discovery of any laws governing descent in hybrids.

Mendel selected thirty-four races of the culinary pea (Pisum sativum) for his experiments, and subjected them to a two years' trial to determine their constancy. From among these he selected for crossing certain races that differed from one another in seven particulars, as follows: (1) In the form of ripe seeds, whether round, or irregularly angular and deeply wrinkled; (2) in the color of the cotyledons in the seed, whether yellow or green; (3) in the color of the seed coat, whether white, in which case the flowers were white, or gray, gray-brown or leatherbrown, with or without violet spottings, with which characters violet and purple flowers were constantly associated; (4) in the form of the ripe pods, whether simply inflated, or deeply constricted between the seeds; (5) in the color of the unripe pods, whether light to dark green, or bright yellow; (6) in the position of the flowers, whether distributed along the main stem, or bunched at its summit; (7) in the length of the stem, whether six to seven feet, or three-fourths to one and one half feet long.

That these groups of characters were constant in the races used, Mendel proved by growing the pure races side by side with the hybrids during the entire time of the experiment. He discovered that of the pairs of opposing characters, one member always excluded the other in the first generation of the hybrids. This character he called the dominant, the other the recessive character.

"This relates without exception," he says, "to all the characters which were embraced in the experiments. . . . Transitional forms were not observed in any experiment." In all seven of the cases, reciprocal crosses were made, and it was demonstrated that for any of the pairs of characters under consideration, the same member of the pair was dominant in all the crosses in the first hybrid generation, and this, irrespective of whether the dominant character was in the seed or pollen parent.

The hybrids being self-fertilized, in the second generation they were found to break up in the perfectly definite ratio of 3:1. the case of cotyledon color, for instance, in the first hybrid generation, all the hybrids had yellow seed, the yellow character being dominant over the green or recessive character. second generation one-fourth of the seeds borne by the hybrids were recessives, showing the green color exclusively, and threefourths were apparently dominants, showing the yellow color exclusively. These twenty-five per cent greens were found to breed true greens through any number of generations, and can therefore be called pure recessives. The seventy-five per cent yellows, however, in the third hybrid generation broke up again, and in the perfectly definite but different ratio of 2:1. third were yellows, which produced yellows only to any number of generations, and can therefore be designated pure dominants; while the remaining two-thirds, while also yellows, and apparently like the other one-third, demonstrated in the fourth generation of self-fertilized hybrids, that they were not pure or dominant yellows but really hybrids in which yellow dominated, since they broke up again in the original ratio of three-fourths yellow (hybrid dominants) and one-fourth green (pure recessives).

This complete dominance, in the first generation of the hybrids, of one character of the pair, the splitting up in the second generation into one-fourth pure recessives and three-fourths apparently pure but really hybrid dominants, and of these in the third generation into one-third pure dominants and two-thirds impure for hybrid dominants, which in the fourth generation split as at first into one-fourth pure recessives and three-fourths hybrid dominants as before, was found to hold true in all varieties of peas investigated and for all seven pairs of characters under consideration.

This demonstrates that the offspring of the hybrids in any generation stand to each other in the ratio of twenty-five per cent pure dominants, twenty-five per cent pure recessives, and fifty per cent hybrids, which in turn are subjected to a similar splitting up in the next generation.

From this, a simple calculation in arithmetic shows that the relation of hybrids to pure forms diminishes with each succeeding generation, so that if we assume each plant in each generation to produce four seeds only, in the tenth generation we will have

two thousand forty-eight plants, of which one thousand twenty-three will have the constant dominant character, one thousand twenty-three the constant recessive character, and only two will be hybrids.

Mendel further found that when, instead of single pairs, several pairs of contrasting characters were combined, the law of segregation in the hybrid generations still held good. He further makes the following interesting statement: "In the experiments above described, plants were used which differ only in one essential character. The next task consisted in ascertaining whether the law of development discovered in these applied to each pair of differentiating characters when several diverse characters are united in the hybrid by crossing. As regards the form of the hybrids in these cases, the experiments showed throughout that this invariably more nearly approaches to that one of the two parental plants which possesses the greater number of dominant characters."

Now the important conclusion which Mendel draws from all this is, that in the cases under examination the germ cells whose fusion produces a new plant are bearers of pure characters, and that in approximately equal numbers. Suppose we transfer our illustration from the plant to the animal kingdom, in order to make it a little clearer.

Bateson crossed Indian Game fowls (dark birds with low, three-ridged "pea combs") with White Leghorns having high single combs. The cross-breds of the first generation were all white or dingy white with the single comb of the Leghorns. In other words, with respect to comb and plumage, the Leghorn characters were dominant in the first generation.

Now as the result of Mendel's discoveries, we have to conclude that in cases of hybridization that follow his law, the white plumage character in the sexual cell of the Leghorn fowl, for example, whether male or female, is dominant in the hybrid over the black plumage character in the sexual cell with which it combines in the Indian Game fowl, whether male or female.

Mendel's discoveries have been verified in the case of peas by Correns, Tschermak and Bateson, and have been demonstrated by de Vries to hold for seventeen other genera of plants, and by Bateson and others for several genera of animals, so there can be no doubt that the particular method of segregation in the hybrids

described by Mendel for culinary peas is quite a common one in the organic kingdom.

This particular mode of segregation in the offspring of hybrids is not, however, by any means a universal rule, nor did Mendel himself so regard it, as may be seen by reading his second paper on hybrids of Hieracium, in which, in all the hybrids, a new intermediate character may appear, which is constant in all succeeding generations, and in which there is no dominance of particular characters and no splitting up of the descendants of the hybrids.

In the case of another type of hybrids, as between distinct races of Zea Mays (Indian corn), as demonstrated by Correns, the first generation of the hybrids show with respect to the pairs of characters, a new character intermediate between those of the two parents. In the second generation, however, these hybrids are broken up into twenty-five per cent pure forms, with one parental character, twenty-five per cent pure forms with the other parental character, and fifty per cent hybrid forms with the new intermediate character. The later generations continue to break up in the same ratio, with the result that there ensues a rapid diminution of hybrids in the offspring; so that in crossed corn as in crossed table peas, with respect at least to certain characters involved in the cross, it is only a question of time when the hybrid virtually disappears.

Now Correns has further found that in the thirteen races of corn which he investigated, some of the characters, for example the nature of the endosperm, whether starchy or sugary, follow the law of segregation in peas. In the first generation of the hybrids, where a race with starchy seeds was crossed with a race having sugary kernels, all of the first generation of the hybrids had starchy endosperm in the seeds.

In the next generation one-fourth had sugary and three-fourths starchy endosperm, and so on as in peas. Other characters, as the relative weight of embryo and endosperm, the size of the plant, the size of the ear, etc., followed the type of hybrids discovered by Mendel in Hieracium, *i. e.*, the hybrids of the first generation show an intermediate character and the succeeding hybrid generations are like the first, showing the same intermediate characters.

The work instituted by Mendel and the demonstration of his law, as stated by a recent writer (Blackman: "Some recent work

on hybrids in plants"), that "in respect of certain pairs of parental characters, the hybrids produce gametes (sexual cells) which contain between them all possible combinations in equal numbers of these characters with the exception that no two characters of a pair occur together," is undoubtedly one of the most epochmaking discoveries in regard to living beings since the days of Charles Darwin.

It enables us to understand such peculiar cases of hybridism as those in the strawberry, known as the "false hybrids" of Millardet, in which either all the characters of the one parent or all those of the other appear in the cross; and those other interesting examples of what is called "mosaic" formation in hybrids, in which the dominance of one or the other character is shown not in different groups of individuals, but in different organs of the same individual.

Mendel's law, to the breeders of plants and animals, opens up altogether new views concerning the process of hybridization. Instead of the old conception of a hybrid as an indefinite fusion in varying degrees of parental characters, much as one would get a can of green paint by mixing together a can of yellow and a can of blue, we now recognize that a hybrid is not a homogeneous mixture of parental characters, but that in every individual race of plants and animals the characters which go to make up the organism are units in the sex cells and combine in a perfectly definite manner which can be discovered by experiment. We find that any individual hybrid plant may be a hybrid in different degrees and in a different manner in its different organs, indeed as Correns has shown even in the different cells of any organ.

We have learned, as Bateson has said, that a "species is a mixture of different phenomena," and that the manner in which these phenomena which we call "species characters" combine in a cross follows mathematical laws and is to be traced to the fact that the sexual cells in the two parents carry the sum of these characters in all possible mathematical combinations, and presumably in equal numbers; and that in the hybrid the combination of these units takes place in different ways, but always in perfectly definite and discoverable ways.

So that out of the confusion and chaos hitherto reigning among the facts known in regard to hybrids, there is coming order and law. We can now see the trail of Mendel's rule running through the best work of the hybridizers of the past. We can now explain much that was inexplicable to them.

A vast deal has yet to be done in throwing light on the dark places of this difficult subject, but a rational beginning has been made in investigating statistically the behavior of hybrids in successive generations. But to no one, however great his work, will there probably come the glory of such a momentous discovery as Mendel made; and let me emphasize once more that Mendel's discovery and Mendel's law are not that in hybrids one character is dominant and the other recessive, and that these characters separate in certain proportions in the offspring of the This misconception has been made by some of Mendel's critics. The principle of dominance and segregation is not a universal one. Mendel's real discovery is the fact of the existence, in the germ cells of the parents, of unit characters in pure The manner of their combination in the hybrids may, as we have seen, be according to the rule found for peas, or it may follow other rules discovered and undiscovered. Finally, what significance has all this to the plain man, the practical horticulturist, the seedsman, the florist, the breeder of plants, and of animals.

If this new law of Mendel's means one thing more than another to the practical breeder, it means that he is to regard his plant or his animal as a collection of characters, and that in crossing he is to regard each character as a unit. It means that he is not to make general crosses between two unusually desirable individals with any expectation of an amalgamation of parental characters. It has been generally supposed in a vague way, that all crossing increases the tendency to vary in the offspring, and out of the miscellaneous mass of different progeny the breeder has hoped that something to his liking might turn up. We know now both that the tendency to vary is not increased by crossing and that the forms which the offspring of the cross do assume are definite for any given species.

The breeder's business then, is to select unit characters in cross-breeding, and breed for one character at a time. Mendel's whole success lay in his fixing upon unit characters, in analyzing his plant, so to speak, into a certain number of easily recognized components. That any definitely distinguishable characters may be selected for crossing is evident. The principle is the same

whether we breed for increased protein or fat content in the corn kernel, for leafiness in the plant, for an increased number of grains in a head of wheat, etc.

If as a result of his preliminary experiments, the breeder finds that the offspring of his crosses split up in respect of the characters in question in the second and third generations of the hybrids, as in the case of the seven characters in peas investigated by Mendel, or the starch and sugar content of the corn kernel as demonstrated by Correns, he may as well cease to cross-breed so far as the particular characters he has in mind are concerned; for his hybrids with each generation will become fewer and fewer, and his pure forms more and more numerous, and he never can expect, practically speaking, to retain the desired dominant character in the hybrid. Suppose, for instance, a grower of carnations wishes to obtain a plant with striped red and white petals, and he finds on crossing a pure white with a pure red strain, that all of the offspring have red flowers; he may immediately suspect the operation of Mendel's law. If on sowing the seed of these closefertilized carnation hybrids he gets approximately seventy-five per cent red and twenty-five per cent white he may stop short, for he can read the future of his experiment, and may conclude at once that he has the pea type of hybrid and that under no circumstances will he ever get a single striped-petalled plant from the offspring of these strains.

Not knowing of Mendel's law he might have expended time and money uselessly in the vain endeavor to obtain the unobtainable. If the wheat breeder, wishing to obtain a red winter wheat with the hardiness of Turkey, but without the beards, crosses, with this end in view, Turkey with beardless varieties and gets in the first generation wholly beardless plants, let him not rejoice prematurely. In the second generation of the hybrids, if he finds twenty-five per cent of his plants bearded he may suspect the operation of Mendel's law, and although the beardless characters may be dominant in the hybrids, he must realize that with each generation the hybrids diminish and the Turkey bearded and the non-Turkey beardless are separating from each other. He will therefore not make the mistake of supposing his beardless forms which appear in each generation are beardless Turkey wheats, but will know them for the original beardless stocks on which he crossed the Turkey.

Of course, he has still to discover whether these beardless forms do not contain other desirable Turkey characters which do not split off as in peas, but remain merged in an intermediate form which may descend intact, as in Mendel's Hieracium hybrids.

The practical man may now understand what many cases of atavism or "taking back" in hybrids may mean, which neither he nor anybody else ever understood before. He may now realize the hopelessness of breeding up by selection among hybrids which follow the rules of segregation or splitting up discovered by Mendel and others, and he has at hand a ready and simple means of ascertaining whether they do follow these rules.

Above all things he must recognize in all work of cross-breeding the necessity of extreme carefulness in planning and conducting his experiments, and for keeping scrupulously exact statistical records of the behavior of all offspring of crosses. He must further remember that the operation of Mendel's law cannot be detected in compound hybrids, but only in simple hybrids produced by crossing pure strains. The law operates, of course, with hybrids of any degree, but the phenomena become too complex for analysis in any but simple hybrids. For any experiment to test Mendel's law, therefore, the use of pure-bred strains for crossing is absolutely essential.

To the operations of horticulturists engaged in growing fruit trees and vines propagated by buds, grafts and cuttings, the Mendelian rules of segregation do not apply, since a hybrid which would split up into dominants and recessives if grown from the seed, may be indefinitely perpetuated in a hybrid by division and propagation of the vegetative members.

If the horticulturist, however, wishes to cross his apples, pears, peaches, or small fruits, the operation of the Mendelian law may become just as effective for him as for the grower of vegetables or for the florist, when engaged in the effort to originate new strains by cross-breeding.

H. F. ROBERTS.

The students at the Agricultural College are examining different varieties of corn and are trying to determine which is the best for all-round purposes. The farmer, however, devotes much attention to securing the best breed of hogs, horses and cattle that he can, but thinks little of improving the grade of corn that he raises. Would it not pay him to do so?—Smith County Journal.

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LOCAL NOTES.

Prof. L. H. Bailey, of Cornell University, will be here about April 15 to look over the work of the Experiment Station.

The Mechanical Department has designed and made a portable boring bar for use on traction engines, etc., and is busy experimenting with it.

President Roosevelt will pass through Manhattan on May 2, and will stay fifteen minutes for an address from the rear platform of his special car.

The papers report the continued illness of Rev. Philip Krohn, formerly a Regent of this College. He resides in New York and seems to be in destitute circumstances.

The winter term will close on Friday of this week and the spring term will commence on Tuesday, March 31. The examinations for admission will be held on Monday, March 30.

The farmers of the vicinity are bringing their traction engines to the College work-shop for repairing and remodeling. The boys have repaired four of them during the past three months.

Dr. S. C. Orr, of Manhattan, took a number of fine photographs of the best animals of the horse exhibition last week. He also took a general view of the horse parade for publishers of stock papers.

Manhattan is building brick sidewalks at the rate of several blocks per week. The city council at its last meetings ordered the building of several blocks near the College. Let the good work go on.

Dr. Paul Fisher, professor of veterinary science at this College from 1897 to 1900, has resigned his position in the State University of Ohio, to take effect April 1. He takes the position of state veterinarian of Ohio.

John Kindsvater, Carl Palmer and J. W. Diuse have completed their apprenticeship in the shops and have accepted positions. The first two went to Ellis, Kan., to work for the Union Pacific Railroad Company, and the third has gone to Kansas City to work for the Western Manufacturing Company.

The carpenter-shops has just finished a set of climbing ladders for the girls' gymnasium and nine large tables for the Agricultural Department. It is also making a hundred bottle racks and fifty test-tube holders for the Department of Chemistry and a large quantity of fixtures for Professor TenEyck's laboratory.

The local editor acknowledges the receipt of a very fine thermometer, an advertisement of Schollenberg Brothers, dealers in bicycles and automobiles, Wichita, Kan. The junior member of the firm was a second-year student at the College last fall term.

President Nichols, Professors Walters and Mayo went to Kansas City on Saturday to attend the banquet of the College alumni which was held in the Midland Hotel. Both of the professors were on the program for addresses. Dr. Mayo spoke on "The Best Crop of the Farm," and Professor Walters on "The Past and Future of the Kansas State Agricultural College."

The annual College horse parade, a part of the program of the stock-judging week, came off last Friday afternoon and was witnessed by several hundred interested spectators. There were about fifty very fine animals, mostly Percherons, in line and the procession was headed by the College military band in full uniform. The parade was held in front of the main College hall.

Professor Willard's bulletin on the Exact Calculation of Balanced Rations is in demand by persons not on the regular mailing list to a greater extent than any previous bulletin issued by the Experiment Station, the only approach to it being No. 92, on Soy Beans. The demand began over a month ago and continues unabated. Most of the requests for it are from the north central states. It evidently treats of a topic of present interest to large numbers of farmers.

The State Agricultural College is spending a week in judging horses. Mr. J. W. Robison, of Eldorado, Kan., a noted breeder and importer of Percheron horses, is acting as instructor. The College owns only one pair of pure-bred mares, but through the kindness of the breeders of horses near Manhattan, the College has the use of some splendid specimens of several different breeds for the three hundred fifty stock-judging students. The horse business is in a flourishing condition and prices are higher than they have been in the last ten years. The students' interest and enthusiasm is on a level with the price of the horses, and the week promises to be one of the most interesting of the entire program of stock judging at the College.—Manhattan Nationalist.

In a private letter to Professor Willard, Professor Hitchcock, formerly professor of botany in this institution, writes: "This morning Professor Spillman, who himself has taught for several years in the Agricultural college at Pullman, said to me, apropos of my remark that Mr. Hall had graduated at Manhattan, 'How is it, Hitchcock, that that college at Manhattan turns out such a large number of young fellows who are trained to take hold of the practical problems of the world? I do not know of another agricultural college that comes anywhere near it in this respect. It has been so for fifteen years.'" Professor Hitchcock explained the system here by which students learn to do by doing and by being given responsibility in practical lines. In his letter he adds that there are openings in the bureau of plant industry for several good men, apparently for more than can be supplied.

W. C. Lee, of Manhattan, formerly private secretary to Pres. T. E. Will, writes to Professor Walters from Washington, D. C., that he has a good position in the division of entomology of the United States agricultural department, but that he gets a little homesick sometimes when he thinks of sunny Kansas.

A committee of the Faculty, consisting of Professors Willard, Brink, Eyer, Remick, Otis, Popenoe, Mayo, McCormick, and McIntyre, have held several sessions the past two weeks to revise the courses of study. It is the intention of the Faculty to strengthen the courses and to slightly increase the requirements for entering the first year. The revised courses after their adoption by the Faculty, will be submitted to the Board at the next meeting.

ALUMNI AND FORMER STUDENTS.

Henry M. Thomas, '98, is now located at Norton, Kan., where he represents the J. I. Case Threshing Machine Company.

E. F. Nichols, '88, professor of physics, Dartmouth College, has been elected to the chair of physics in Columbia University. Professor Nichols is evidently recognized as being in the front rank of American physicists.

The Capital reprints from the Concordia Kansan a lengthy notice of Supt. J. G. Haney, '99, in which Editor Davies commends Mr. Haney's success in life as an inspiration to young men who seem to lack opportunity, since it shows what pluck and persistence may accomplish under difficulties.

Chas. R. Hutchings, '94, has presented the Chemical Department with a very fine specimen of crystallized copper sulphate, as it is produced on the lead strip in the factory. This continued interest in the College is very gratifying. Our alumni, with a little thought and interest, could be of very great service in adding to the illustrative material equipment of the College, and in ways that cannot be replaced by the simple plan of purchase.

Samuel Dolby, a graduate of the K. S. A. C., class of '97, died on March 11, at the National Soldiers' Home, at Dayton, Ohio. At the beginning of the Spanish war, Mr. Dolby enlisted with the Twenty-second Kansas Volunteers. After being mustered out of that service, at Leavenworth, he joined the Twentieth U.S. I., with which he served in Manila nearly two years, when he was honorably discharged on account of tuberculosis contracted in Mr. Dolby will be remembered by many friends the service. here, especially in the Baptist church, of which he was a member, and on College Hill, where he made his home, as a young man of noble aims and a pure character. His incentive as he worked his way over many obstacles through College was preparation for a useful life, and his most cherished hope was to have remained in the Philippines as a Christian missionary. Even under the heavy burden of disease he never ceased his earnest efforts for the spiritual uplift of those about him, and died in the triumphant hope of the life everlasting.-Nationalist.

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KANSAS STATE AGRICULTURAL COLLEGE

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THE INDUSTRIALIST.

VOL. 29:

MANHATTAN, KAN., MARCH 31, 1903.

No. 24

THE FINANCIER OF THE CIVIL WAR.

POPULAR heroes are usually found among those who have led armies to victory. There is so much of glamour and noise, so much of the spectacular about the field of battle, that the attention of men is attracted to those who "rage" over its ensanguined spaces more than to those others who, quietly and unseen, labor and plod to make the warriors' victories possible. And yet battles are not won alone by the men who are at the front. They that provide "the sinews of war"—the means of furnishing uniforms, arms, ammunition, food, and pay; means of providing horses, ambulances, tents and blankets for the soldiers—they just as truly help to fight and win battles as do those who are conspicuous in the conflict itself.

The real cost of wars no man can fully estimate. To say nothing of the frightful loss of life and of the untold suffering entailed, the actual expense in dollars is beyond human computation. There is the immense destruction of property—buildings burned, farms devastated, cities sacked, public works demolished, roads ruined. There are the thousands of men, in the full vigor of life, withdrawn from the ranks of productive industry, to be fed, clothed, paid by the labor of others. And these not only produce nothing, are not only "mouths without hands maintained at vast expense," but are engaged in the work of positive destruction.

To provide for the vast and extraordinary expenditure necessitated by the existence of war is, then, a Herculean task. This is peculiarly true of a conflict conducted on so elaborate a scale and extending over so long a period of time as our Civil War. The field of active operations stretched from the hills of Pennsylvania on the north to the semi-tropic waters of the Gulf on the south; from the plains of Kansas on the west to the stormy Atlantic on the east. Over all this vast territory for four delirious years the conflict raged; armies marched and fought, battles

At the close of that struggle the North alone were lost and won. had about 1,000,000 men under arms. The cost of the war to the Union side has been variously estimated at from \$8,000,000,000 to \$10,000,000,000, sums so enormous that the human imagination cannot comprehend their significance. Of course, the entire amount was not raised during the progress of the conflict; nearly \$3,000,000,000 was in the form of a debt at the close of the struggle. But who can understand the meaning of such figures? They represent a sum so stupendous that with all the resources of the nation, we have succeeded in paying off only about twothirds of the obligation in thirty-eight years. To run in debt \$3,000,000,000 in four years was no slight achievement. And the credit for this achievement should be largely ascribed to the great secretary of the treasury during that stormy time, Salmon P. Chase. Our country has had other distinguished men in charge of the strong box of the nation, but no one of them, with the possible exception of Alexander Hamilton, has shown equal genius for finance; and even Hamilton did not have a task that could compare with that of Chase in magnitude.

Salmon Portland Chase was born in the year 1808, at Cornish, New Hampshire. When eighteen years of age he graduated from Dartmouth College, and, like many other young men after completing their under-graduate studies, he taught school for awhile. Then he "went west" and had soon opened an office for the practice of the law in Cincinnati.

Early in his career, Mr. Chase became deeply interested in the anti-slavery movement and soon was one of the leaders of the "liberty party" and later of the "free-soil party." That was the generation of "storm and stress" in slavery agitation, when men's convictions were manifested and their passions aroused more than over any other question that has ever agitated the American people since the founding of the government. The whole nation was stirred to its depths. The angry tides of feeling that attended the discussion of this subject threatened at times to sweep the state from its moorings. We must remember that the slavery question cut right across the old parties, many whigs in the South favoring the ideas of the slaveholders and many democrats in the North standing for the restriction of slavery, some of them even for its abolition. It is not very surprising, therefore, to find Mr. Chase elected to the United States Senate in 1849 by a

combination of free-soilers and democrats. While in the Senate he stood sturdily against the extension of slavery into the new states and territories, distinguishing himself especially for his opposition to the famous Kansas-Nebraska bill. When the republican party was organized he found himself in closer sympathy with that organization than with the democratic party of the time, and in 1856 was chosen by the new party as governor of Ohio. this time Mr. Chase had won not only a local but a national reputation as an able, uncompromising, patriotic man, who had the courage of his convictions and the genius to express those convictions with clearness and power. It was not strange, therefore, when the republican convention met in 1860 to nominate a candidate for the presidency, that his name should be presented as a suitable man for the honor. Conditions were against his nomination, however, and Lincoln was chosen instead. After Lincoln was elected, it was but natural that the new president should select Chase as a member of the cabinet.

Chase was not an emotional man, and at first thought it might seem surprising that one of his cold, intellectual temperament should have become an abolitionist. But, although differing in this particular from many reformers, he was no less ardent and steadfast in his advocacy of freedom than were many of the more demonstrative members of that party. Indeed, it is not improbable that he was more persistent in his attitude than he would have been had he not taken that position as a result of calm deliberation and a lofty sense of duty. His light was less fitful and burned with a steadier radiance than might have been possible had it been alternately blown upon by gusts of passion and obscured by the faintness of reaction. This very cool, intellectualness of temper proved the quality that fitted him for the great task which confronted him as head of the treasury department. It would not do to try to raise money for the war according to impulse.

When he became secretary of the treasury, Mr. Chase found the finances of the country in a deplorable condition. The nation was not greatly in debt, but some of the previous officers of the government had done what they could to rob the treasury and cripple the resources. He had to fill the vaults, and even more stupendous task! he had to provide funds for the most tremendous conflict of modern times.

Money he must raise—immense sums of money—and he must There was no time to secure it by levying taxes. raise it at once. He must also provide for a constant income to meet the necessities of the struggle, after the first contingencies were provided The only way to obtain the money was to borrow it; to borrow it, moreover, on the faith of a government whose credit was This might well seem a difficult, almost a hopeless. undertaking, for capital is proverbially sensitive. "To him that hath shall be given, but from him that hath not shall be taken away even that which he hath" is peculiarly true of money. Capital kneels at the feet of him that hath an abundance, but to him that hath not it turns its back. More than this, capital is extremely selfish. It expects its "pound of flesh" most of all from that borrower who is in hard straits, and cuts it from the place "nearest the heart." With the one in greatest need it drives the hardest bargains. Still further, capital is utterly devoid of patriotism, and when the country is in especial distress it exacts its Thus not only is it most difficult to borrow highest usury. money in such an exigency, but the terms are extraordinarily severe. The "daughters of the horse-leech" then fatten on the life-blood of the nation all the time crying as they gorge themselves: "Give! Give!"

But Secretary Chase, agreeing with President Lincoln, did not purpose to put the government altogether into the hands of the Shylocks. He would keep, so far as possible, the temple of the national finances free from the traffic of the money changers. He undertook to raise money by a popular loan, trusting to the patriotism of the great mass of the common people to make the undertaking successful. Then it was proposed by Amasa Walker that the notes thus directly issued by the government to the people should bear interest, not only that the loan might be popular but that inflation might be prevented by making it an advantage to the people "to hoard the notes as an investment when the demands of trade failed to call them into circulation as currency."

When this project was proposed to Mr. Chase, he said: "That is all very well, but there is one little obstacle in the way that makes the plan impracticable, and that is the constitution." But Lincoln replied: "These rebels are violating the constitution to destroy the Union; I will violate the constitution if necessary to

I suspect, Chase, that our constitution is going save the Union. to have a rough time of it before we get done with this row. Now, what I want to know is, whether, constitution aside, this project of issuing interest-bearing notes is a good one." "I must say," responded Mr. Chase, "that with the exception you make, it is not only a good one, but the only way open to us to raise money. If you say so I will do my best to put it into immediate and practical operation, and you will never hear from me any opposition on this subject." He did put it into operation, and it proved to be very popular with the people. Of course the Shylocks did their best to depreciate the paper and make it a means of speculation at the expense of the government. Toward the close of the war, when it became evident that the Union cause would triumph, they bought up the bonds with greenbacks purchased at an enormous discount, while the bonds themselves not only bore large rates of interest but were ultimately to be redeemed in gold.

Yet, notwithstanding the fact that the bonds were made objects of speculation by the capitalists, it is difficult to see in what other way the enormous sums requisite to carry on the war could have been secured.

While Chase was secretary of the treasury the congress passed many measures to provide means for conducting the war and to place the finances of the country upon a satisfactory footing. Under Buchanan's administration the ordinary expenses of the government had been about \$60,000,000 a year. Before the war had been long under way, the expenditures had risen to \$60,000-To furnish these vast sums congress authorized 000 a month. loans, passed measures to increase the direct taxes, greatly extended the list of dutiable articles, enormously increased the rate of duties, passed the greenback laws that have given rise to such a deal of trouble down to the present time, and also adopted measures establishing the national banking system. It is not within the province of the present paper to discuss these various measures. A few words, however, may be permissible regarding the law last mentioned. This law authorized five persons with a capital of at least \$100,000, except in small places where a smaller sum was permitted, to undertake banking business, by depositing with the treasury department bonds of the United States "to the extent of at least one third of their capital, for which there should be issued to them circulating notes in amount equal to 90 per cent of the market value of their bonds, but not beyond 90 per cent of the par value of such bonds." Afterward, in order to induce state banks to take advantage of these acts and organize under the national system, a law was passed placing a tax of ten per cent on the circulation of the state institutions. Under such pressure multitudes of state banks were speedily transformed into national banks.

It must not be supposed that Secretary Chase was responsible for all the financial legislation adopted while he held this office, or even that he always favored it. The law making greenbacks legal tender, for example, he did not approve, and after he became chief justice he rendered a decision declaring that feature of the greenback law unconstitutional. A short time afterward, however, two new justices having been appointed, who held different views from those of Mr. Chase, they reversed the decision and made the greenbacks once more a legal tender.

In 1864 Mr. Chase resigned his position as secretary of the treasury. The war was not yet ended, but under his administration the treasury had been filled and provisions had been made for meeting the financial demands of the exhausting conflict howsoever long it might continue. It was a marvelous achievement, and the chief credit for its successful accomplishment should be ascribed to the genius of the great secretary. He found a treasury that had "fallen among thieves" and that was lying prostrate and exhausted; he nourished it back to health and to a vigor it had never known before. Of him it could be said, as Webster so splendidly said of Hamilton: "He smote the rock of the national resources and abundant streams of revenue gushed forth."

It was doubtless with a feeling of relief that Mr. Chase laid down the responsibilities of his position as a member of the cabinet. With his cold and somewhat unresponsive temperament, he did not, perhaps, fully appreciate or sympathize with the unprecise and humorous nature of the president. Lincoln was unconventional and inclined to facetiousness, always retaining much of the off-handed, rough and-ready manners of the frontier. These traits Mr. Chase, with his more precise and formal disposition, his New England education, and his high sense of personal dignity, could only slightly admire, if, indeed, he could understand them. He never seemed to feel quite at ease when his

official chief illustrated a point in a cabinet meeting by telling a jocose story. It is also well known that he was not unwilling to be the democratic candidate for president. Under these circumstances he could not be very comfortable to remain longer in the cabinet, and was not sorry when an opportunity came honorably to resign.

His eminent fitness for the judicial robe was so apparent that, on the death of Chief Justice Taney in 1864, the president nominated Mr. Chase to fill the position. It has been supposed by some that Lincoln was the more willing to make this appointment in the hope of thereby "shelving" the great man as a candidate for president when his own time should expire. Be this as it may, the appropriateness of the appointment has never been questioned, for Mr. Chase made one of the very greatest of our chief justices. He came nearer being the equal of John Marshall, perhaps, than has any other man that ever presided over our august supreme court.

In 1868 Mr. Chase was a candidate for nomination to the presidency, and might, perhaps, have received the honor had not his views on negro suffrage been displeasing to so large a proportion of the democracy of that day. But the presidency could have added but little to his fame; he would have conferred luster upon the office. He died in 1873, but his memory shall not perish. His name will ever hold a noble place in the annals of his country as a great lawyer, a great financier, a great judge, but, most of all, a great man.

THE SQUARING OF THE CIRCLE.

OF all problems attracting general interest outside of the limited company of professional mathematicians, that of the quadrature of the circle is most famous. The effort to construct with ruler and compass a square equal in area to a given circle has engaged both competent and incompetent minds for nearly four thousand years. Finally, about twenty years ago, after many futile attempts, the first rigorous proof of the impossibility of the solution of the problem was given. In this connection it is to be understood that the constructive solution of a problem in elementary geometry involves the use of no higher mathematical instruments than the straight-edge and compass.

The conquering of that which has for ages baffled the energies

of the keenest intellects naturally possesses a fascination for many minds, and hence has arisen a veritable army of circle squarers. Seldom has such a tremendous amount of ignorance and self-conceit been concentrated on any subject. In the realm of religious development it may be occasionally true that "the Lord hath concealed these things from the wise and prudent and revealed them unto babes." The discovery of truth in mathematics, however, is not like the drawing of the grand prize in a lottery. Success presupposes willingness to get into position to attack the problem intelligently through an acquaintance with its history and a familiarity with the necessary weapons.

The proceedings of the French Academy of Science for the year 1775 contain a resolution not to examine from that time on any so-called solutions of the quadrature of the circle. The academy was driven to this determination on account of the multitude of professed solutions of the famous problem which were sent to it every month in the year, and which collectively suffered the fatal objection of being wrong. And since any scientific society to day would also consign all such communications to the oblivion of the waste-basket, it remains for the circle squarer to secure recognition through the medium of the newspaper. Hence the occasional announcement that Mr. John Smith, of Bird Center, has at last solved the problem of the quadrature of the circle.

The nature of the problem under consideration is such that we must emphasize its close relationship to the question of rectification, viz., the determination of a straight line exactly equal in length to the circumference. For it is known that the circle is equal in area to a right triangle in which one side is equal to the radius of the circle and the other side to the circumference. Supposing, therefore, that the circumference of the circle has been rectified, we could construct this triangle. And now, since by use of straight-edge and compass every triangle can be converted into a square of equal area, the problem would be solved.

It is seen at once that the determination of the value of π has an intimate bearing on the subject. If the value were exactly equal to the ratio of two integers to each other, then the constructive rectification would present no difficulties. But it has actually been demonstrated that there do not exist two whole numbers, be they ever so great, that exactly represent by their

ratio to each other the number π . It does not follow, however, from this fact that the problem of rectification is impossible. For instance, the side and diagonal of a square are incommensurable, and yet either line is easily constructed from the other. But we are at liberty to conclude that the quadrature of the circle stands or falls with the problem of rectification or the construction of π .

A brief outline will now be given of the argument leading to the conclusion of impossibility, the account being taken essentially from the translation by Beman and Smith, of Klein's Fa-

mous Problems in Elementary Geometry.

The fundamental problem may be thus stated: What geometrical constructions are, and what are not, theoretically possible? The singular thing is that elementary geometry furnishes no answer to the question. We must fall back upon algebra and the higher analysis. The question then arises: How shall we use the language of these sciences to express the employment of straightedge and compass? This new style of attack is rendered necessary because elementary geometry possesses no general method as do the last two sciences.

In analysis we have first rational operations—addition, subtraction, multiplication, and division. These operations can be effected directly upon two given segments by the aid of proportions if in the case of multiplication and division we introduce an

auxiliary unit-segment.

Further, there are irrational operations, subdivided into algebraic and transcendental. The simplest algebraic operations are the extraction of square and higher roots, and the solution of algebraic equations not solvable by radicals, such as those of the fifth and higher degrees. As we know how to construct \sqrt{ab} , rational operations in general and irrational operations involving only square roots can be constructed. On the other hand, every geometrical construction which can be reduced to the intersection of two straight lines, a straight line and a circle, or two circles, is equivalent to a rational operation or the extraction of a square root. In the higher irrational operations the construction is therefore impossible, unless we can find a way of effecting it by the aid of square roots. In all of these constructions it is obvious that the number of operations must be limited.

We may therefore state the fundamental theorem: The necessary and sufficient condition that an analytic expression can be

constructed with straight edge and compass is that it can be derived from the known quantities by a finite number of rational operations and square roots.

Of necessity the solution is impossible when the problem has no corresponding algebraic equation. An expression which satisfies no algebraic equation is called a transcendental number. This case occurs with the number π , as was shown by Professor Lindemann, of Königsberg, in 1882.

It is, as a rule, very difficult to prove that a thing is impossible. Lindemann's demonstration, naturally, was not effected by the use of the old, elementary methods; the necessary methods were first furnished by the theory of definite integrals and departments of the higher algebra developed in the last few decades; in short, it required the direct and indirect preparatory labor of many centuries to make finally possible a demonstration of the insolvability of this historic problem.

Although the processes leading to this result involve rather complicated considerations, the entire subject has been presented in simplified form in the work above referred to and thus brought within the comprehension of students conversant only with elementary mathematics.

B. L. Remick.

In an editorial concerning the new Board of Regents of this College, the Kansas Farmer makes the following pertinent and complimentary remarks: "Few better than the graduates of the College know its strong and its weak places. None have greater ambition for its future. One of the deficiencies of former Boards has been the lack of knowledge of the work and workings of the institution. The four alumni are strong men; successful men in the rough-and-tumble of the world of work. It would be a good investment for the State to send these four Regents on an extended tour of observation among other agricultural colleges and experiment stations. They would be quick to appropriate all the lessons of such a tour and would know how to apply them so as to make them vitally advantageous to the College of whose Regents they constitute a majority. They will not be destructive tinkerers with the complicated machinery under their care, but the State may expect progressive, constructive work at their hands and not be disappointed."

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PRES. E. R. NICHOLS...... Editor-in-Chief PROF. J. D. WALTERS..... Local Editor PROF. J. T. WILLARD..... Alumni Editor

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LOCAL NOTES.

The Animal Husbandry Department has increased its assets by two large litters of pigs.

Miss Myrtle Mather, '02, expects to leave April 1 for Bloomington, Ill., where she will be teacher of dietetics in the Brokaw hospital.

F. W. Boyd, a member of the senior class, left for Stillwater, Okla., last Saturday, where he will remain for a few months. He intends to return next year to graduate.

The Students' Herald of last week contains a "write-up" of the Department of Industrial Art and a photo engraving of the senior member of the Faculty, Prof. J. D. Walters.

The Horticultural Department is happy over a new team of work horses, purchased at Des Moines, Iowa, by Regent Mc-Dowell. The animals are handsome Percherons.

J. W. and J. C. Robison, of Towanda, Kan., have presented the Animal Husbandry Department with a framed picture of a fine Percheron horse, Bijou 18372, which is a prize winner at the Kansas and Missouri state fairs.

As we go to press we hear of the very serious illness of Doctor Roberts, of Manhattan, the father of Professor Roberts, of this College. The doctor has a complicated case of pneumonia growing out of an attack of the grip. It is reported that he cannot recover.

Regent R. J. Brock returned from Cleveland, Ohio, Monday night, where he went to take testimony for the Topeka Gas Company. On Saturday he had stopped over at Kansas City to attend the alumni banquet at the Midland hotel, where he gave an address.

The College is seeding a plot of ground of forty acres on the Williston farm to orchard grass, brome grass, English blue-grass, common red clover, mammoth red clover, and timothy, to test the cropping quality and permanency of these varieties with regard to pasturing.

On Monday evening of last week Mrs. Clure entertained her classes and a few invited guests, with a bloomer party, at the girls' gymnasium. After a short program of exercises and sports, light refreshments were served. The girls responded by presenting their teacher with a basket of flowers bearing the inscription: "Bloomers by the Bloomers."

Mr. E. A. Wharton, of the well-known retail dry-goods house of Manhattan, has presented the Department of Domestic Science with a very fine collection of samples illustrating quality, kinds and designs in curtain goods.

The superintendents of Smith and Jewell counties are making arrangements to send their county graduates to the Agricultural College for a visit, an innovation that will bear fruit in many ways and deserves to be imitated by other counties.

Professor Walters is preparing drawings and specifications for two new buildings for the Hays branch Experiment Station—a stable and barn for sixteen work horses and a boarding-house for the farm hands. The latter will cost about \$2000.

The last number of the Topeka Mail and Breeze contains an article on the work of horse judging at this College. The report is illustrated by two fine half-tones. Many other papers speak approvingly of this highly practical work of the Department of Animal Husbandry.

Albert E. O'Brien, a student, was tried a week ago last Saturday in the probate court and found insane. He moved here last fall with his mother from Cottonwood Falls to attend College and did well in his studies up to November, when his mind began to fail gradually. He was taken to the asylum Sunday by Sheriff Boyle, it being thought that early treatment might better his condition. His father, Glenn O'Brien, is principal of the Cottonwood Falls schools.

Last week the Printing Department sold and shipped its old drum cylinder press and rearranged its press room. A "Winslow" window cabinet for job faces, including two pairs of top cases, several fonts of job type, new brass galleys, etc., have lately been added. These purchases, together with the new two-revolution "Optimus" press a quarter-medium "Gordon" jobber and a new wire stitcher, lately purchased, make the College printing-office, except for type and composing-room equipment, a model. Superintendent Rickman takes great pride in its growth by keeping everything in "apple pie" order.

Last Tuesday afternoon students of the stock-judging classes and many visitors were treated to an interesting dressed-beef demonstration. A three-year-old steer, which was a prize winner at the International Live Stock Exposition at Chicago last December, a cross-bred Shorthorn-Hereford steer, a "canner," a baby beef, also a veal calf, were slaughtered and their carcasses compared. The different specimens were for the purpose of showing the frame work and the distribution of the fat and lean portions of meat in animals of various ages and various degrees of fatness. The work was conducted by John Gosling, of Kansas City, under the direction of Professor Otis. On Wednesday afternoon the Domestic Science Department gave a cooking test of the various cuts of meats, which was served to invited guests, who passed judgment upon color, quality of fiber, flavor, and relative rank.

The students from Marshall county to the number of twentyone accepted an invitation of Professor and Mrs. Walters to
spend last Thursday evening at the Walters' residence, at the
foot of Bluemont. They must have had a merry time, for they
formed a permanent Marshall county students' club and made
arrangements to have a picnic or two this term. Mrs. Walters
is a Marshall county girl herself and the Professor says he lived
there sixteen months—the happiest time of his youth.

Mrs. W. A. Johnston, president of the State Federation of Women's Clubs, and Mrs. H. O. Garvey, president of the Topeka Federation, visited College last January. Mrs. Garvey speaks of her visit as follows, taken from the Kansas Farmer: "A short time ago I visited our State Agricultural College at Manhattan, especially the manual training and domestic science departments. had heard the statement made that Kansas leads the other states in her Agricultural College and I was proud to realize the truth of it. I wish every young man and woman in this State might have the privilege of attending this College. When I saw their fine courses of study, their many advantages in the way of the library and the laboratories for their college work, and added to this regular study, the opportunity of applying their knowledge in so many lines, working out real problems in the carpenter shop, at the forge, and at the machines, I was glad, for this is the allround education that we need. The boys are skilled in wood- and iron-work until they can make their own tools, build houses, and even construct steam engines. The girls are trained to competency in sewing, cooking, and domestic economy, learning cooking as a science, drafting patterns and making their own clothing."

The Board of Regents met in regular session last week to transact the usual business of the spring term. They assembled on Wednesday but did not organize till Thursday morning, spending the afternoon looking over the College and inquiring into the needs of the different departments. In the evening, in company with the Faculty and their wives, they accepted an invitation of President and Mrs. Nichols to attend a reception given in their honor at the executive residence. On Thursday morning the organization was effected by reëlecting Capt. J. S. McDowell, of Smith Center, president of the Board, Hon. C. E. Friend, of Soldier, vice-president, Attorney R. J. Brock, of Manhattan, loan commissioner, and Pres. E. R. Nichols, of the College, secretary. A change in the law made by the legislature this winter having abolished the office of College treasurer, there was no treasurer elected and the office will be abolished with the close of the present fiscal year. The matter of erecting the new buildings and selecting suitable sites for them was left to a building committee, consisting of Berry, McDowell, and Nichols. On Friday afternoon the Board left for Hays Experiment Station, to look over the improvements made there during the past two years and to determine further steps to be taken. A joint session was held on Friday evening with the State Normal board, in session at that place, to take joint action on some needed improvements.

ALUMNI AND FORMER STUDENTS.

Notice.—All alumni are requested to send at once any information concerning change of address or of occupation, for insertion in the forthcoming College catalogue. Any information that any may possess concerning other alumni, who may not see this notice, will be thankfully received. This year completes the fortieth of the College, and it is desirable to make the information that the catalogue conveys as nearly perfect and up to date as possible. Address: Miss Lorena E. Clemons, Secretary, Manhattan, Kan.

The Colorado Experiment Station has just issued several bulletins and press bulletins written by J. E. Payne, '87, field agent of that station for investigation of the problems of the great plains. The titles of the publications are: "Crops for Unirrigated Lands," "The Prairie Dog as a Range Pest, and Methods of Extermination," "Trials of Macaroni Wheat by Dry Farming," "Unirrigated Lands of Eastern Colorado." The last is based on seven years' study and residence by the author. Mr. Payne is probably the best-informed man on earth in respect to problems of the plains.

E. L. Kingsbury, who was for many years secretary and auditor of the Kansas Southwestern Railway Company, has recently been appointed president of that road. It runs from Kansas City to Caldwell, Kan., with branches, and is now a part of the Santa Fe system, though originally a part of the Frisco. Mr. Kingsbury is a son of Judge and Mrs. B. L. Kingsbury and was born in Burlington. When a boy he developed a talent for electrical work and was sent to the State Agricultural College for a year or two [1878-'81]. There he studied telegraphy as an industrial, and soon secured a position as a railroad operator. Since then his history has been one of competency and close application to business, with rapid and successive promotions, until he has reached the highest position in the gift of the company.—Burlington Republican.

The alumni and former students of Kansas City and vicinity held a reunion and banquet on the evening of March 21. The gathering was a highly successful one and much enjoyed. The following is a complete list of those present: C. H. Kirshner and wife, B. L. Short and wife, M. E. Chandler and wife, F. H. Meyer and wife, J. E. Thackrey and wife, S. I. Thackrey and wife, W. S. Dille and wife, Anna Snyder, Carl Snyder, T. L. Jones, Albert Dietz and wife, Frank Yeoman, Mabel Crump, S. H. Creager and wife, Chas. B. Harling, Florence Harling, C. V. Holsinger and wife, C. D. Adams and wife, Fred R. Winter and wife, Bertha Bacheller, R. J. Brock and wife, P. S. Creager and wife, Clay E. Coburn and wife, S. L. Van Blarcom, W. A. Anderson, R. C. Harner, H. G. Pope and wife, H. C. Rushmore and wife, R. G. Lawry, A. T. Kinsley and wife, W. E. Smith, Jennie M. Selby, Marie A. McIlwaine, J. M. Curtice, Ed. H. Webster, C. E. Pincomb, Elizabeth Tunnell, Elsie Nuenschwander, J. W. Hambrick, May Harman, F. M. Linscott and wife, E. D. Williams and wife, Pres. E. R. Nichols, Prof. N. S. Mayo, Prof. J. D. Walters.

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Local Editor, - PROF. J. D. WALTERS
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THE INDUSTRIALIST.

VOL. 29.

MANHATTAN, KAN., APRIL 7, 1903.

No. 25

LIBRARY SCHOOLS.

NEW fields of work are constantly being opened to young women, and perhaps few are more attractive than those presented to the graduate of the library school.

Melville Dewey established the first library school in 1887, in connection with Columbia College. The State Library School at Albany, N. Y., was transferred from Columbia College in 1889 to the state library at Albany. A general idea of the work of these schools may be obtained by stating briefly what this particular one claims to offer. (1) It affords the aspirants for library honors the same opportunities granted the lawyer, the doctor, or the minister, each in his chosen profession. The students have a well-defined purpose in view and intend to carry it out. (2) It brings together those who are interested in the subject. drones are admitted; but, if they do get in, soon find the pace too rapid and quickly retire. (3) The course of training gives the students an insight into the most approved methods of management and systems of classification adopted by the larger libraries in the country, and, by occasional visits to the library centers, they are enabled to see how the work is carried on. When the graduates leave the school they are prepared to grasp any theory. (4) It places library work on a more elevated plane by making it a recognized science. (5) It teaches trustees and the public to have a greater respect for the calling of the librarian; for they find at the school not mere enthusiasts, but earnest, thoughtful, far-seeing students, fully alive to the requirements of the times and prepared to enter whole-souled into this great educational work. (6) It has resulted in giving to new libraries trained and competent persons, who could lay a good foundation and build upon it. Every graduate is a living example of the usefulness of library schools.

The most highly educated do not of necessity make the best librarians. It is quite as necessary to know how to meet and treat

people who visit the library as to have a wide knowledge of books. Most of the schools make a biennial visit to some of the leading libraries. One of the visits of the New York State Library School was to the Philadelphia, Baltimore and Washington libraries. brief extract from their report of the trip will give an idea of the work done: "After a trip down the river to New York and a half day spent according to individual preference, we began by visiting the bookstores of Macmillan, Appleton, Longmans, Dodd. Mead and Co., Chas. Scribner's, G. P. Putnam, and by attending a book auction. In the evening, the students were at home, in the Hotel Albert, to the thirty-nine former students resident in New York City and vicinity. Spent the most of one afternoon in the Columbia University library, so richly deserving careful study. A part of one afternoon was spent at Pratt Institute in inspecting the library and in listening to a forceful and discriminating lecture on Kipling by Professor Lawton, of Adelphi College. On Sunday we spent a few minutes in the Cooper Union readingroom, receiving a vivid impression of the class frequenting libraries on Sunday afternoon or evening. Leaving New York, we began work in Philadelphia at the Mercantile library. We visited the Apprentices library with its attractive children's room, the library of the University of Pennsylvania, and studied the process of reorganization in a large library. Drexel Institute came The beautiful entrance hall formed an ideal place for the reception given us by the Drexel Institute library association. The reading-room of the library company of Philadelphia is particularly cool and attractive on a May morning, and we longed to choose a favorite book and a seat on the back porch near the quaint old Franklin tablet, but we resolutely resisted and questioned the patient assistants as duty demanded. There was time for only a glimpse at the beautiful rooms of the historical society before we must hurry on to Baltimore. Here we received a most hospitable welcome from the librarians of the Peabody Institute, the Johns Hopkins University, and the Enoch Pratt Free Library. Perfect weather crowned the day we spent as guests of the Library of Congress-the red letter day of our trip. A visit to the National Museum, the Smithonian Institute, the department of agriculture and the Washington public library completed our work."

The library with which Pratt Library School is connected, and which serves as a laboratory for its students, was opened in 1888.

The library has made a strong feature of the fine and useful arts. In 1890, the free library of Pratt Institute organized training classes in library economy. This was done in order to supply the need of trained workers for its own staff, as well as the demand from the libraries for competent assistants. The general course covers one year, with an optional second year of study in special lines of work. With the class in 1895, the requirements in English were materially strengthened. The regents ordered that no credentials should be issued by the university to a candidate seriously defective in his use of the mother tongue, unless stamped across its face, "Deficient in English." The school is unwilling that its graduates should discredit themselves and their teachers by using incorrect English in articles, reports, bulletins or correspondence, however creditable may be their knowledge of bibliography, library economy, and cataloguing. The following four examples illustrate the nature of the problems given to seniors in advanced bibliography: (1) Make a reading list, with notes, on recent Russian history. (2) Make a chronological list of the works of Louisa M. Alcott, and works about her. (3) Prepare a complete list of books and articles on the housing of the poor. (4) Make, for a travel club, a select list of illustrated books on Italian art, architecture, and antiquities.

The school in connection with the library department of the Drexel Institute of Art, Science and Industry, in Philadelphia, was organized in 1892. The school offers a one year's course in library science. As the instruction is largely technical, a good general education on the part of the student is presupposed, a high-school education or its equivalent being a necessity. Among the special collections of the library are the Anthony J. Drexel bequest, which consists of the private library of the founder of the institute and bequeathed by him to the library in 1893, and the Geo. W. Childs collection of manuscripts of modern authors and autograph letters of noted persons. Among the treasures of the collection are the original manuscript of Dickens' "Our Mutual Friend," bound in two volumes, closely written, as it was sent to the printer, with innumerable erasures and insertions; an autograph manuscript of Thackery's lecture on George III, handsomely bound and extra-illustrated with portraits, original drawings and water colors, by Thackery. This is the copy from which he read when he lectured in America; the original manuscript of Lamb's "Essays on Witches and Other Night Fears." The autograph letters comprise, among others, a set of letters from the Presidents of the United States, the Pinkerton correspondence, including letters from many noted Englishmen of the latter part of the eighteenth century to John Pinkerton, and a collection of miscellaneous letters written by English and American authors and statesmen. One of the most interesting and artistic possessions of the library is a collection of original Japanese prints in color by famous Japanese artists. This is a gift of James W. Paul, jr., president of the board of trustees.

The University of Illinois State Library School had been conducted at Armour Institute of Technology, Chicago, until 1899. when it was transferred to the University of Illinois. There is a four years' course, entitling one to the degree of bachelor of library science. Two years of the course are devoted to general university studies, and this is the least preparation that will be accepted for entrance upon the technical work. The University proposes to send out not only trained but educated librarians. Before completing the course, every student will have had actual experience in every department of the library. Each woman's club in Urbana and Champaign sends its program for the year to the library school. Here a reference is made out specifying in which of the three libraries the material is to be found. A copy of each list is posted in the libraries, and another sent to the lady who presents the subject. Libraries are studied by types and by countries. Special attention is given to the libraries in the United States, their reports being used as text-books.

EMMA J. SHORT.

THE PAST, PRESENT AND FUTURE OF THE KANSAS STATE AGRICULTURAL COLLEGE—LET'S PULL TOGETHER.*

A FTER some introductory remarks, the professor said: When I was elected a member of the Faculty twenty-seven years ago, all the alumni of the Agricultural College might have been seated around an ordinary dining-table in a private dining-room. To-day you have gathered to the number of a half hundred or more in a commercial center beyond the borders of the State, and similar gatherings have of late been held in Washington, D. C., Chicago, and over on the Pacific coast. When I beheld the "College Hill" for the first time, it was an insignificant little high

^{*}Excerpts from a toast responded to by Prof. J. D. Walters, at the alumni banquet at Midand Hotel, Kansas City, Mo., March 21, 1903.

school of uncertain standing at the western border of civilization. To day it is the largest institution of its kind in the world. Truly there have been great changes the past quarter of a century, and it is no empty prophecy when we assert that the future will witness similar growth. I dislike to deal in figures and statistics at an occasion like this, but hope you will pardon me for quoting a few startling facts.

A quarter of a century ago the annual enrolment of our alma mater was about two hundred, but I doubt if there ever had been present at any time over one hundred fifty students; to-day we may boast of an annual enrolment of over fifteen hundred and an actual attendance in the class rooms this winter term of over thirteen hundred—a growth of nearly one thousand per cent.

The Faculty has increased correspondingly. Twenty-seven years ago there were but seven or eight teachers. We can hardly say specialists, for in order to be a specialist a scientist must devote himself exclusively to one branch of science, or better still to one division of a branch, and we of old had work of the most diversified character, every one of us. Professor Shelton, a man who, by the way, has done as much or more for scientific agriculture in western America than any other man, taught, in addition to all the branches of agriculture and stock breeding, such studies as oratory and general history. Professor Kedzie, a rising and ambitious young chemist from Michigan, taught all the branches of chemistry, physics, geology, mineralogy, meteorology, and sometimes geography. Professor Ward, who to this day has somehow never received the credit which he deserves, taught higher mathematics, rhetoric, literature, and civil engineering, and your speaker stood for all the work in drawing, fathered every stray class in mathematics from arithmetic to trigonometry, and had charge of the College orchestra. To-day the Faculty members have become specialists of high rank, and are eagerly sought after by eastern institutions at high salaries, while a corps of trained assistants and a car-load of student assistants are ready to take their places.

A quarter of a century ago the College had but one finished building, and two or three others—diminutive structures—in embryo, so to say. We "held school" in the "old barn" or Armory. The chapel was up-stairs in the west end, and served, in addition to the usual function of a College aula, such

purposes as a class room in oratory, a practice room for a lame piano and two squeaky organs, and a laboratory for the Domestic Science Department. My friend, Harry Rushmore, will remember that Mrs. Cripps—the Lord bless the good old lady—had her sewing machines in the southwest corner. There were no stables, no barns and no sheds. The excuse for a barn we had was a hay shed, built by afternoon classes, of stock boards and fagots, down in the southwest corner of the farm. To-day the College owns thirteen large, stone buildings, and the legislature this winter has appropriated funds for three more.

A quarter of a century ago there was no library. We had a wheelbarrow full of books—old Latin grammars and dictionaries, ecclesiastical commentaries and Westminster quarterlies, which the Hon. I. T. Goodnow had solicited and begged together among his clergyman friends in New England. To-day the College owns a well-selected, modern, scientific library of nearly thirty thousand well-bound volumes, shelved on steel shelves of modern construction, and supplemented by large, well-lighted reading-rooms.

A quarter of a century ago there was almost no scientific apparatus—no machinery of any kind; no microscopes. To-day the College possesses several buildings devoted exclusively to the study of physical and biological science and stocked from basement to garret with the most modern apparatus in the market. I do not wish to say that we do not need many things yet (the legislators of the future should make a note of this last sentence), but I can say that we are incomparably better able to do our work than we were in that "auld lang syne."

But the growth of the Agricultural College has not been along physical lines only. It has not simply been a growth of numbers and quantity—it has been a genuine organic development for the better in every way. The College now has a name as a scientific institution of high rank in all the lands. Its graduates and exstudents occupy positions of trust in every commercial center in America. Its specialists in the agricultural department at Washington, D. C., are among the very first in the capital city. I have a letter in my pocket, written by an officer of high standing at Washington, D. C., in which he says that the authorities of that department are wondering how Manhattan can furnish such a large number of men of such merit, and that Secretary Wilson is trying to get more of them.

The farms and homes are proclaiming their testimony of the efficiency of the Agricultural College in every township and village of the State. Our graduates to the number of a thousand, and our ex-students to the number of an army corps, who have gone back to the parental home and paternal acre are among the leaders wherever good citizenship and genuine usefulness are the decisive qualities required. The College is proud of them—proud of every one of its many sons and daughters.

It is proper that we should state here that the Kansas State Agricultural College has contributed its share, and more than its share, toward the solution of educational questions of various kinds-questions which are now settled; questions many of which to-day look ridiculous to some of you younger men and women. When, in 1862, the agricultural college bill was passed by congress, establishing agricultural colleges in every state by giving for this purpose a most royal land grant, technical and industrial education were unknown quantities in this country and the old classical scholars, many of them, were not slow proclaiming that scientific and technical education could never take the place of the "old" education; that scientific education alone would produce human monstrosities in place of well-balanced men and women; that these new institutions would surely fail unless they succeeded in grafting their scientific and manual training on the old stump of dead Cæsar and deader Plato. The war of words was a hot one for many years, but it has been fought and won. It is all over, and you, my young friends, are a standing proof of the anti-monster side. The fact is, that a constant study of truth -and that is what science is -a constant pursuit in the class room and laboratory of truth, of fact, of reality, produces the highest type of manhood and womanhood in the land. Hundreds of great technical institutions in America and Europe have furnished the most conclusive proof of this.

The land-grant institutions have decided that co-education is the proper and best system of educating women—and not only women, but men, too. Two generations ago it was held that women needed no higher education; in fact, it was held that they were better off without much "larnin'." As late as 1829, the school board of the "hub city" of America fought for weeks over the question whether women should be admitted to the city high school. When the land-grant colleges were established and the

organic act read that no difference should be made between citizens on account of color or sex, a "wail went up" all over New England. The fossils in the old classical he-schools wrung their hands in horror and consternation over the notion that women would sit in the same class room with men. A delegation of clergymen of New York visited the President of Cornell University, the land-grant institution of New York, and wanted to know what he was going to do about it, and whether he would actually let the women study biology with the men and romp on the same campus with the stronger sex. The president said he most certainly would do this very thing and would not build the suggested stone wall, dividing the sheep and the goats. "But will there not be scandals, and escapades, and marriages, and all sorts of trouble?" one of them said. President Cornell answered: "I do not expect much trouble, and as to marriages can only say that I hope there will be many. In no place in the world can young people learn to know their companions better than in the class room."

You, my young friends, will corroborate this last statement, and I am glad that so many of you have assisted these colleges in disproving the fears of the old fogies. As I look over your number, I recall the fact that many of you have found partners in accordance with Cornell's prophetic hope, and there are many more who ought to do so soon.

But I must not keep you, by stringing my toast too long, from better things that are to follow. The question, What will the future be? is soon answered. The College will keep on growing and developing—this is all. Under the guidance of an Anderson, a Fairchild, and many others, the institution has acquired a momentum that will propel it onward and upward across any obstacle that may get in its way. There may be blundering Boards, penurious legislatures, but the College will go on forever. The velocity may temporarily be retarded, but the direction will not be changed.

Kansas has over seven thousand school districts. May we not hope that within another generation every one of these districts will be represented at Manhattan? The College is in good hands now, because it is in the care of its ex-students and its alumni. I believe with Governor Bailey, that there is no better way to take care of an institution of learning than by placing it in the custody of those who have received their education there.

I assure all of you that the College is all right, because its students, its Faculty, its Board and its President are all right. President Nichols is a young man, as yet—not as old as the typical college president of the East. But we out West believe in young men, in energy and effort. Our President wears a No. 7½ hat. Way back in the days of classic Greece, two thousand years ago, the poet of the beautiful Iliad sang a stanza which will bear repeating to-night as we speak of the man at the helm:

Ulysses at the rudder sat;
No syllable was spoken.
But he led the ship through night and waves
Until the storms were broken.

FOOT-AND-MOUTH DISEASE.

POOT-AND-MOUTH disease is a highly contagious disease, attacking cattle principally, but is easily transmitted to sheep, goats, pigs, and other domestic animals. Man frequently contracts the disease from infected animals. It is generally conconsidered to be a germ disease, although the specific germ has not been discovered.

Foot-and-mouth disease has been known for many years in Europe, and immense losses have followed its ravages, some portions of Europe being rarely free from this disease and in other portions it breaks out at irregular intervals. One attack of the disease does not confer immunity, and an animal may have the disease several times.

Foot-and-mouth disease varies in virulence. In some outbreaks many animals die, but in most cases the mortality is not high, the greater loss resulting from loss of flesh and general deterioration resulting from the disease and the necessary restriction of the live-stock trade which follows.

Foot and mouth disease is transmitted from one animal to another by direct contact and through the medium of infected food, litter, watering places, stables, cars, and attendants. It is possible the contagion may be carried short distances by the air. The milk of an affected animal is highly infectious. The period of incubation, or the time that elapses between exposure and signs of the development of the disease, is short, but may vary from twenty-four hours to twenty days. Most cases develop within two or three days after exposure.

Foot-and-mouth disease usually starts with a chill. The animal remains by itself, the back is arched, hair erect, flanks tucked up, and there is shivering or twitching of the muscles. A sick animal moves with reluctance and there is stiffness or marked lameness in the gait. A thick yellowish secretion collects at the inner corners of the eyes and about the edges of the nostril. The temperature of the animal rises from two to five degrees F. Blisters form in the mouth, about the feet, and on the udder of cows. The blisters vary in size from a pea to a quarter-dollar and are filled with a watery fluid. They soon burst, leaving raw sores with shreds of tissue hanging about the edges.

In the mouth the blisters usually form on the lips, tongue, cheeks, and pad of upper jaw. The animal champs the jaws with a smacking noise. There is profuse slavering from the mouth. The saliva at first is normal, but later becomes thick and ropy. The mouth is often so sore that the animal is unable to partake of solid food. The blisters about the feet usually occur between the toes or about the coronet and often cause severe lameness. One or all of the feet may be affected. After the blisters burst, raw, angry sores result. In severe cases the hoof may be shed, or the ulceration may involve the greater part of the soft structures of the foot.

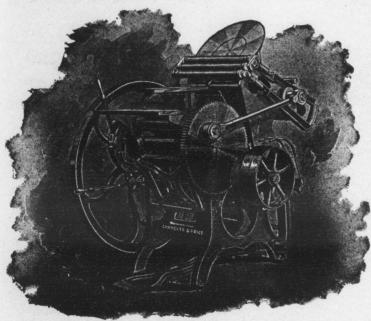
TREATMENT:—So far as known, foot-and-mouth disease was first introduced into America in the summer or early fall of 1902, being first discovered in the New England states, where it has been confined by rigid quarantine restrictions prescribed by the general government and the states in which it exists, against the movement of susceptible animals. A vigorous effort is being made to stamp out the disease by a quarantine to prevent its spreading—destruction of the affected animals, and thorough disinfection. These are the only methods that have ever been effective in dealing with this disease.

Diseased carcasses should be buried deeply or burned. Hides or wool should not be saved, nor should diseased carcasses or milk from diseased animals be fed to other animals. N. S. MAYO.

Over one hundred students are enrolled in analytical chemistry. The new laboratory rooms being too small to hold the whole class, the students were divided into two divisions, one working the fifth and sixth and the other the seventh and eighth hours.

OUR NEW PRINTING MACHINERY.

L AST August the Board of Regents appropriated for use in the Printing Department all the money that could be spared from their limited supply, and it was possible on last Jan-

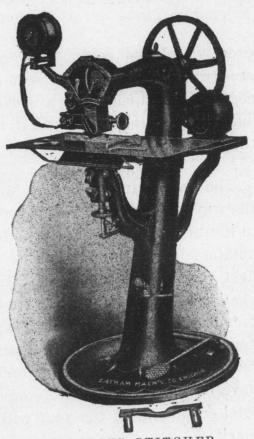


QUARTER-MEDIUM "GORDON."

a new quarter-medium "Gordon" (everybody knows what the Gordon is), and a new "Monitor" wire stitcher. We print half-tones of each machine. All were purchased of the Great Western Type Foundry, Kansas City, Mo.

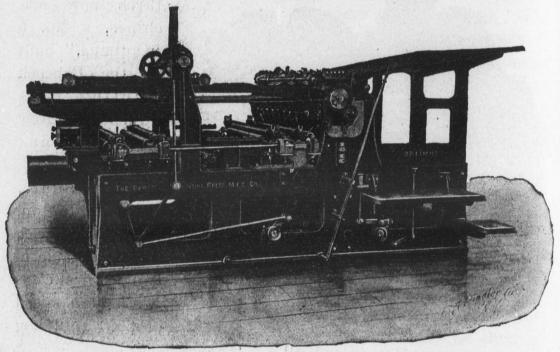
It is hoped that the Board will find it possible to make an appropriation this year sufficient to finish the equipment throughout, including new job type, a linotype, power cutter, stereotyping outfit, ruling machine, and the hundred and one other things necessarily needed to properly instruct in the "Art of Arts Preservative." It is also hoped that the time is not far distant when the legislature

uary to install three new machines, a No. 5 "Optimus," built by the Babcock Printing Press Company, New London, Conn., which is a modern, up-to-date, two-revolution, four-roller press, and is capable of doing first-class work at a speed of 2600 an hour;



"MONITOR" STITCHER.

will make sufficient appropriation so that the department may do all the College printing. At present, on account of the lack of equipment and funds, about \$9000 worth of work is being done annually away from College. With equipment and means at the command of the College authorities, this work could be done at a



THE "OPTIMUS"

greatly reduced cost. The work at the College is all done by students, partly for pay but always under instuction. Those receiving compensation are earning their way through College, and many could not attend if this opportunity was not afforded them.

J. D. RICKMAN.

The final examinations on March 26 and 27 brought to a close the winter term, and with it the record of the largest attendance in the history of the institution. The following is the enrolment obtained from the records of the Secretary: Preparatory, 148; first year, 490; second year, 205; third year, 158; fourth year, 65; post graduates, 16; special students, 27; dairy short course, 38; farmers' short course, 124; apprentices, 37; total, 1308. The doors of the College were again thrown open Tuesday morning for the work of the spring term. A large number of students have been assigned, but the enrolment is not yet added up. The total enrolment of the year will easily cross the fifteen hundred mark.

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PRES. E. R. NICHOLS..... Editor-in-Chief PROF. J. D. WALTERS..... Local Editor PROF. J. T. WILLARD..... Alumni Editor

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LOCAL NOTES.

Governor Bailey has designated April 24 as State Arbor Day.

The Department of Veterinary Science has ordered a \$150 incubator for developing bacteria.

Doctor Mayo went to Leavenworth on Friday to make investigations for the State Live Stock Commission.

The Department of Veterinary Science is sending out blackleg vaccine by hundreds or thousands of doses every day.

Mrs. Joseph Clure, of Des Moines, Iowa, has been in the city for several weeks visiting her son, Professor Clure, of this College.

The Horticultural Department received this week a new patent orchard sprayer. The machine came from the Field Force Pump Company, of Elmira, N. Y.

At the close of the beef-judging week the students of the judging school presented Mr. Gosling with a handsome \$35 gold-headed cane. He appreciated the gift and said he would keep it for an heirloom, and that it would remain in the family as long as a Gosling survived.

Ex-regent Ed. Secrest and wife, of Randolph, passed through Manhattan, Wednesday, on their way to San Jose, Cal., their future home. Mr. Secrest has lived in Riley county a long time and says he does not like to leave, but he thinks his health will be better in California.

Miss Esther Hanson has completed her College work and will return Commencement for the graduating exercises. At the close of the winter term she left for Irving for a short visit with her brother, who is principal of the city schools there, and next week she will go to her home in Marquette.

The Mechanical Department has completed fifty funnel supports, nearly a hundred extension rings and about thirty condenser clamps for the Chemical Department. These were specially designed by Professor Willard for use in the general system of equipment planned for the chemical laboratories.

On March 31, 1903, John F. Leonhardt, of this city, and Miss Mildred Hurlburt, of Sharon Springs [sophomore last year], were married at the home of the bride. Only a few of the relatives were present. A reception will be given in their honor this afternoon at the home of J. F. Swingle. They will make their home five miles west of town.—Mercury, April 1.

Work has begun on a fire-proof hood in the chemical laboratory of the Experiment Station. The designing was chiefly the work of Professor McCormick, whose technical knowledge and willing spirit have been so often called upon for assistance in equipping the Chemical Department. This hood will enable work to be safely performed with dangerously inflammable solvents, day and night.

At the recent session of the Board of Regents, the following committees were appointed: Auditing—Friend and Tulloss. Building—Berry, Nichols and McDowell. Employés and Salaries—Nichols, Fairchild and Brock. Course of Study—Fairchild, Tulloss and Brock. Experiment Station—McDowell, Berry and Friend. Printing—Tulloss and Brock. Library—Fairchild and Friend. Domestic Science—Brock and Berry. Regent Fairchild was given general charge of the Fort Hays Branch Experiment Station.

R. A. Oakley returned from Chicago last Saturday, where he has been specializing in botany in the Chicago University since the first of the year. He will enter College again and will graduate with the '03 class. Mr. Oakley is one of the coming scientists. He will have completed the four-years' course in three years, and during this time he did special work in the Botanical Department, besides making personal investigations in almost every bog and swamp in this part of Kansas.—Manhattan Republic.

Through the interest of many friends, funds were secured for the purchase of a window to be placed in the Congregational church of Manhattan, in memory of Geo. T. Fairchild, who was a member of that church during the period through which he filled the Presidency of this institution. It is now planned to hold a memorial and dedicatory service at the church, at 3:00 o'clock on the afternoon of Easter Sunday, April 12. All who loved President Fairchild in life or honor his memory are cordially invited to be present. Several of those who knew him well will make brief addresses, and special music will be rendered.

The Industrialist is pained to record the death of Dr. H. S. Roberts, of Manhattan, the father of Prof. Herbert Roberts, of this College, and Dr. Norman Roberts, of Chanute. The doctor died of pneumonia, Wednesday morning, April 1, after an illness of less than two weeks, and was buried Friday afternoon from the home. Doctor Roberts was born in 1840, at Galesburg, Ill. served three years in Company E of the Eighty-third Illinois In-He graduated from Jefferson Medical College, Philadel-After he had been in Kansas two years he was married to Miss Mary Pouse Fuller, of Jamestown, N. Y. Doctor Roberts has been president of the State Medical Society, a member of the State Board of Health, and surgeon-general of the Kansas National Guard. For many years he was a member of the board of education of Manhattan, and since 1867 has served continuously on the board of pension examiners. He was a member of the A. O. U. W. and the Knights of Honor. In his death the city and the State loses one of its representative citizens, and the College one of its best friends and patrons.

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THE

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NDUSTRIALIST

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Local Editor, - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

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THE INDUSTRIALIST.

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No. 26

COLLEGE EDUCATION.

(Ex-President Seth Low, of Columbia, in Youth's Companion.)

A COLLEGE EDUCATION must always be thought of as a great opportunity. It need not be said that to a large proportion of young men the advisability of availing of this opportunity never becomes a practical question. That this is the case makes clear the responsibility resting upon those who do enjoy it.

The considerations which should determine a young man as to whether or not he should go to college manifestly must differ in each individual case. It may fairly be assumed, however, that the determining factor ought to be, in the mind of a young man who can enjoy the opportunity, whether he feels himself likely to do justice, in the long run, to the responsibility which such an exceptional privilege implies.

The natural question, and so far as it goes the proper one, in the mind of such a young man will certainly be: What can the college education give to me? In the thoughtful mind, there will certainly follow the other question alluded to: That is to say, if I have this education, what can I hope to do for my day and generation which otherwise I could not do?

This view of the matter brings to the front the general effect of college training. Undoubtedly there are many instances where the actual result does not conform to the expectation. On the other hand, the general experience is, unmistakably, that the college-bred man is introduced into a sympathetic acquaintance with literature quite unusual among those not so trained.

There is, besides, as a usual result, a general broadening of the mental powers in all directions.

It appears to be admitted that for the purposes of practising any of the learned professions, so-called, the collegiate education is a desirable, if not an essential, equipment. More doubt is expressed as to the value of the college education for a young man who proposes to pursue a scientific or a business calling.

In the School of Mines, the scientific department of Columbia College, the judgment is uniformly held by the men who have long been instructors there, that the college-trained men make the best specialists when they begin to specialize. The same argument appears to be equally forcible as to a business career.

In both cases the main argument against first seeking the general culture turns in the last statement upon the time required for the college course. Probably few who seek educacation at all would hesitate to take the college course if it did not compel them to enter upon their business or their profession so much later in life.

The practical question is, in most cases: Can I afford the time? That is a question which each must answer for himself. The aim of this paper is to lead young men rather to frame the question in this way: Why should I not afford the time?

Looked at merely from the point of view of what the college education can do for the man, it appears to be conceded that for many departments of life it is an equipment which is well-nigh essential. There is good reason to claim that, even in business, and in other spheres of activity where the service of the college education is less easily traceable, nevertheless it is of substantial value.

If now the question be shifted to the ground first indicated, the argument becomes stronger still. There can be little if any doubt that the college education puts into the armory of a thoughtful man weapons which he may make of utmost service to his fellows.

There comes out of it naturally a respect for the past which springs from the compelled recognition on the part of the student of the achievements of men in literature, in art, in philosophy and in many other departments of life, before our day. There comes into the mind a loyalty to truth for its own sake, a spirit of liberty also, which seems the vital air of a great university.

Therefore, with this respect for experience, this worthy reverence for the past, there is found also the counterbalancing principle of progress. Thus results the type, not often seen, to be sure, in its perfection, yet often enough to demonstrate its value, of the well-rounded man—a man full of the life of his own time, joyfully anticipating the triumphs of the future, yet genuinely

reverencing the past as the foundation upon which both the present and the future, whatever their achievements, must rest.

Specialization may make a man bright and keen; its tendency inevitably is to make a man also narrow. Even Darwin wrote of himself that the result of his close attention to the subjects which he made his own had resulted in the atrophy, as it were, of those parts of his nature which had enabled him in earlier life to enjoy Shakespeare. The capacity for the enjoyment of Shakespeare he found in his later years he had lost altogether.

If this be the result of specializing in so great a man, it seems to make clear the importance of broadening the man at the beginning, as widely as possible, before the specializing be begun by him.

Undoubtedly service of the highest value to mankind has been rendered by the men of one idea, but that may not be the rule for the masses of men. The average man probably is happiest, as well as most useful, when he enters into the closest possible sympathy with his fellows.

This close relation is pre-eminently what the college education gives in the largest sense. Life must follow it, of course; experience must be added to reading and to study; but the college training gives at the start what no amount of experience is competent to supply.

Men of widest experience, as they have come through struggle and effort to occupy places of importance and influence among their fellows, have become the most sensible of the value of the college training which they themselves had lacked.

If these general considerations are sound, the two questions which a boy should ask himself who is considering whether or not to take the college course, would appear to be these: Can I afford the time? and am I competent to profit by the opportunity? If the answer to the second question is in the affirmative, one should hesitate long before answering the first in the negative.

The library is growing. Over \$100 worth of books were received the past two weeks from publishers; 90 volumes, mostly Supreme Court reports, were received from the Secretary of State, in compliance with a recent act of the legislature; 362 volumes were received from the bindery of the State printing house, and 1250 volumes are still at Topeka waiting to be bound.

CAUTIONS ABOUT PASTURING ALFALFA.

HERE is probably no crop that appears more refreshing and inviting in the spring of the year than a good field of alfalfa. The plant starts early, makes rapid growth, and when dry feed becomes scarce or stale, there is a temptation to pasture it with various classes of stock. For horses, swine, or chickens, alfalfa undoubtedly furnishes the best pasture obtainable. there are certain dangers attached to its use that should be care-The cow has four stomachs: the first, or fully considered. paunch, is where the bulk of the food consumed is stored, ready to be ground in the process of chewing the cud. Under certain conditions some feeds, green alfalfa being a notable example, while lying in the paunch will form gas, and when this gas is present in sufficient quantities it may cause the cow to bloat to such an extent as to cause death, unless the animal is punctured by making an opening into the paunch to allow the escape of the gas.

No doubt if alfalfa could be used successfully as a cow pasture it would mean greatly increased profit from both dairy and stock cattle. During the last two years the Kansas Experiment Station has been experimenting to see what could be done in the way of pasturing alfalfa. This work has covered both fall and spring seasons.

On September 26, 1901, nineteen common cows were given all the alfalfa hay they would eat and in the afternoon pastured on alfalfa, which was in a fine succulent condition as a result of the September rains. They were watched carefully and left in from an hour to an hour and a half. No bad results followed. next morning they were again fed all the alfalfa hay they would eat, but after having had a taste of the green alfalfa they seemed to care very little for the hay. They were turned into alfalfa pasture at 7:20 A. M. and were taken out at 8:35 A. M. No sign of bloat was apparent. They were left in a dry lot, with access to alfalfa hay. At 1:20 P. M. one of the smaller cows was bloated. To give the matter a thorough test, the remainder of the herd was again turned on alfalfa pasture and remained there about fifty minutes, when one of the cows showed signs of bloating. Gas formed so rapidly that it was necessary to use the trocar and canula. paunch was so full of food that very little gas could be removed by the canula. Four other cows were also bloated. Three were

relieved by a gag, and one was finally relieved by the trocar and canula, although complete relief did not occur until about 7:30 P.M.

Soon after this experiment the College was presented with some sample alfalfa bits with the request that we make a thorough test of them. These bits consist of a small tube about three eighths of an inch in diameter, the bore being about one-fourth inch in diameter. The center of this bit is perforated with holes a little over one-eighth inch in diameter, connecting with the bore running lengthwise of the bit. These holes are six in number and are about one half inch apart. It is claimed that these bits will prevent cows from bloating while pasturing alfalfa. The gas formed is supposed to go to the mouth, enter the bore of the bit through the perforations and escape from the bit on either side of the mouth. Since the bits were recommended by some of our most successful stock breeders in the State, we thought it no more than right that we should give them a test.

The first of November we took ten calves, averaging about six months of age, and put them on alfalfa pasture, five with bits and five without bits. These calves became accustomed to the alfalfa gradually, the time being increased by fifteen minutes per day until they got all they would eat. This experiment was continued through the month of November and we did not have a single case of bloat with or without the bits.

We continued the experiment with the bits during the months of May and June, 1902, using cows instead of calves. Three cows were provided with bits and one without. These cows were first allowed to eat all the tame grass pasture that they could handle, after which they were turned on alfalfa for fifteen minutes. next day they were given the same treatment, with the exception of increasing the time on the alfalfa to thirty minutes; the third day they were on one and one half hours; the fourth three hours, and then all day, and a little later were allowed on all day and night. No case of bloat appeared for over a week. At this time the alfalfa was cut, and soon after the cows were eating second One morning soon after this the cow without the bit bloated immediately after being watered; she was relieved of the gas by a gag, after which an alfalfa bit was placed in her mouth, when she was allowed to return to the alfalfa pasture. couple of days all went well, after which she bloated up six

(Concluded on page 412.)

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1. From 9:05 to 9:50.
2. From 9:55 to 10:40.
3. From 10:45 to 11:30.
4. From 11:35 to 12:20.

¹ Alternate days.
² First half term.
³ Last half term.
⁴ Experiment Station work.

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Afternoon Industrial Hours (Tu. W. Th. F.)
5. From 1:30 to 2:30.
6. From 2:35 to 3:35.
7. From 3:50 to 4:50.
8. From 4:55 to 5:55.

different times, and the last time had to be punctured. One of the other cows bloated three times and another four times. One of the cows went through the experiment without bloating at all. About the middle of June a fifth cow was added to the experiment with a bit. In less than ten days she had bloated twice.

Our experience indicates that it is unsafe to pasture alfalfa with cows, although some farmers have done it successfully, and we have done it successfully with some individual animals. If a man wants to run the risk of pasturing alfalfa we believe the bits are a help, in that they prevent the cows from eating alfalfa as rapidly as they would without them. The bits might have some influence as a gag, although they appear to be rather small for this purpose and have a tendency to make the cow's mouth sore. Our experience indicates that the openings into the bore of the bit are of no particular value as they are stopped up with the green feed within five minutes after the cows commence eating. The straight bits seem to be better than the curved ones, as they are more easily cleaned.

The cows did well while on alfalfa. They increased in the milk flow and not only did not need grain but would practically refuse to eat it, but they required so much watching, especially with the second growth of alfalfa, that we considered it too risky to keep them on it longer.

D. H. Otis.

IN MEMORY OF GEO. T. FAIRCHILD.

THE ladies of the Congregational church of this city, having in hand the replacing of the old windows of the church, deemed it fitting and appropriate to secure one that should be a memorial of the late Pres. Geo. T. Fairchild, who was a member of that church. The design of the window was selected by Mrs. Fairchild, in the studio of J. & R. Lamb, glass and art works, of New York City. It is a figure of Christ with slightly extended hands, standing amidst the lilies against a background of hills and sky; and all the details are beautifully worked out in rich and artistically blended colors.

All who knew President Fairchild knew him to be a tireless worker both in the church and out, so the beautiful picture window seems quite fitting, for it represents the Master saying, "Come unto Me all ye that labor and are heavy laden and I will give you rest."—Matt. 11:28. This was the president's favorite

quotation. The cost of the window was \$175, and relatives and friends gladly made up the sum.

The church was profusely decorated with palms, ferns, etc.; a few callas and Easter lilies were effectively placed amongst the greenery, in front of and between the window and the pulpit. The large crayon portrait of President Fairchild that adorns the President's office at the College was borrowed for the occasion and stood on an easel facing the audience, between the memorial window and the pulpit. The frame of the portrait was almost covered with beautiful cream roses, white carnations and ferns. The program was as follows:

Hymn, "Home of the Soul," -- Choir - - Mr. Thurston, pastor Scripture Reading and Prayer, -Solo, "Beyond the Mystic Sea," - -. . . . Mrs. Hofer - - Mr. R. M. Tunnell Address and Unveiling of Window, -President Nichols Hymn, "Naomi," the family hymn, - -Choir Mr. W. W. Hutto Address, - - - - -Prof. J. T. Willard Address, Solo, "The Silent River," -- - Mrs. Hofer - Mr. R. M. Tunnel Benediction,

None of the speakers attempted to give anything approaching a complete delineation of the life and character of President Fairchild, but each spoke of a few salient characteristics, as his life had most strongly appealed to or impressed itself upon him. They paid high tribute to the strength, gentleness, conscience, self-control, justice, broad versatility and dignity of the man whose exemplary life impressed itself upon all who met him and to whose wise and sound policy is due in so large a measure the efficiency and success of the educational institution on the hill.

The music was all appropriate and beautiful and was chosen by the family, except the solo, "Beyond the Mystic Sea," the words of which were written especially for this service by Mrs. Newell, of Zeandale.

"The Silent River" was a favorite of the President's, and it was sung at his funeral in accordance with his wish.—Manhattan Republic.

A blooming prunus triloba near the northeast corner of the Physical Science Hall is attracting considerable attention on account of the wealth of its blossoms. It is joy to see some of the flowering bushes on the campus.

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LOCAL NOTES.

The Mechanical Department has just completed a case of storage drawers and shelves for the Chemical Department.

Mr. D. L. Taylor, of Sawyer, Pratt county, has promised to present the Agricultural College with a very fine Hereford heifer.

The last number of the *Live Stock Indicator* published at Des Moines, Iowa, contains a three-column write-up of the dressed-beef demonstrations of this College.

- Supt. J. G. Haney, of the Fort Hays Branch Experiment Station, came in last week to consult in respect to the irrigation experiments there and upon other matters.
- C. T. Johnston, irrigation expert of the United States department of agriculture, visited the Experiment Station recently to make arrangements for cooperative irrigation experiments at the Fort Hays Branch Station.
- H. A. Heath, of the Kansas Farmer, visited the experimental steers last Tuesday and was highly pleased with their appearance. He was at Manhattan to attend the D. L. Taylor Shorthorn and Hereford sale at the new arena.

Chas. Bull, dairy student in '02, is making quite a success in the manufacture of cream cheese at Cimarron, Kan. He is called "The Kid Cheesemaker." During the month of January he sold \$443.03 worth of cheese and \$591.73 during February.

The Animal Husbandry Department has purchased about two hundred fifty eggs of different breeds of high-grade poultry, with a view of improving the College flocks. A majority of these were placed in the incubator a week ago. Some were given to mother hens.

The Agricultural College baseball team defeated the Kansas University team on April 10, in Manhattan athletic park, by a score of nineteen to six. The farmers batted the University twisters to every corner of the field. Coach Barnett seems to know how to instruct a team.

In the course of the next few weeks the Farm Department expects to be provided with the modern and approved machinery for planting and cultivating corn and forage crops. Mr. H. Lyman & Sons, agents for the John Deere Plow Company, have been given an order for machinery, including a corn planter, corn cultivators and lister, etc., amounting to more than \$200.

The College bought three very fine Buff Cochins of Chas. Stineberger, of Wakeeney, and received five of the birds instead, Mr. Stineberger donating two of his handsomest hens.

Professor Dickens left Friday for Kansas City, Mo., to attend the spring meeting of the Missouri Valley Horticultural Society. He read a paper on "The Relation of the Experiment Station to the Fruit Industry."

- W. S. Myers visited the Experiment Station last week in the interests of the use of Chili saltpeter as a fertilizer. There is an increasing demand in this State for information concerning fertilizers, and the Experiment Station will probably have more and more work in the future in this connection.
- Geo. C. Wheeler, assistant in the Animal Husbandry Department, returned Thursday from Girard, where he conducted a series of official tests of the Holstein-Friesian dairy herd of H. N. Holdeman, with a view of placing some of the animals on the advanced register for milk and butter production.
- Regent J. S. McDowell has purchased three spans of Percheron mares and one span of bay Clyde mares for the College. The teams are for the Farm and Animal Husbandry Departments and will be used jointly by these as necessity may require. The teams have arrived in good shape and are beauties in every respect.

The April meeting of the Manhattan Horticultural Society will be held at Horticultural Hall, Thursday, April 23, 2:30 P.M. The program is as follows: "Fungus Diseases Affecting Fruits," Assistant Leslie Paull; "Gathering and Marketing Small Fruits," A. J. Nicholson; "What Chemistry has done for Agriculture and Horticulture," Assistant Shaw, of Chemistry Department. Reports of standing committees on horticultural crops.

- J. J. Davis, editor of the Manhattan Mercury, died last week at St. George on his way home from Florida, where he went three weeks ago in the hope of bettering his health. Mr. Davis came to Manhattan about twenty five years ago and was one of the founders of the Mercury, the democratic organ of this city. He had been its editor ever since. During the past few months his health had been very bad and the trip to Florida was taken as a last resort. He leaves a wife and son.
- Prof. W. J. Spillman, chief of the office of agrostology of the United States department of agriculture, visited the College and Experiment Station recently. He was very much pleased with what he saw during his two days' stay. He regards this institution as among the very few that are giving its graduates from the agricultural course what they ought to have, viz., thorough scientific training with practical experience. Only one or two other agricultural colleges, in his opinion, rank with this in the success with which they combine these two elements of higher agricultural education.

The Horticultural Department has commenced spraying operations on the Spohr farm, south of Manhattan, which was rented last year for a three-years' term. The prospects for a good apple crop were never better, and small fruit looks fine. The Spohr orchard contains about fifteen hundred bearing apple trees and over two thousand grapevines.

The Experiment Station has entered into a cooperative experiment with the United States department of agriculture to make a trial of the different standard varieties of corn, the experiment to continue for five years, the seed of each variety furnished from the same grower by the United States department of agriculture each year. This experiment is also to be tried in several other states. It proposes to carefully note the growth of the corn, the yield per acre both of ears and fodder, and the yield of shelled corn which each variety produces.

The Board, recognizing the need of the Farm Department for horses to carry on the farm and Experiment Station work, set aside \$2000 at its recent meeting to immediately be used for the purchase of teams. At present the department is hiring four teams. The Animal Husbandry Department has three teams, which are used to a considerable extent for the general farm work. Only one of these teams is equal to a good day's work, the other horses being old and having passed the stage of usefullness. Four new teams will be a splendid addition to the equipment for agricultural work.

The prizes offered by a number of stockmen and dairymen of the State, to the students of the stock-judging contest at the State Agricultural College, were awarded on April 6. Six beautiful cups, valued at \$75, were offered as first prizes. The class trophy was won by the freshmen. The class winning this three years in succession may hold the cup. The following received first prizes: Fred VanDorp, sophomore, poultry judging; E. H. Hodgson, senior, dairy cattle judging; E. E. Ford, short course, swine judging; W. W. Stanfield, freshman, horse judging; A. L. Cottrell, senior, beef judging. The grand trophy for the best stock judge was won by A. L. Cottrell.

Doctor Mayo was recently called by the Live Stock Sanitary Commission to investigate reported outbreaks of foot-and-mouth disease among cattle near Concordia and in Atchison county. In all cases the animals were found to be suffering from ergotism, caused by eating wild rye that had been attacked by this fungus. Ergot causes the blood-vessels of the extremities to contract to such an extent that in many cases the hind feet and tails slough off. A large amount of ergot developed in wild rye as a result of the wet season. The Veterinary Department issued a warning bulletin to the stockmen last fall, that outbreaks of ergotism were to be expected. Stockmen in localities where the disease occurred were greatly relieved when the true nature of the disease was known and pronounced to be not contagious.

Some folks doubted when the government gave the State the seven thousand six hundred acres of Ft. Hays reservation in Ellis county, for a Branch Experiment Station and a western State Normal School, if a State normal could be made a success in the short-grass country. Its first year is not yet done, and with no permanent building, using the old fort buildings to demonstrate its feasibility, the enrolment of students already exceeds one hundred, the majority of them coming from other counties outside of Ellis county—and thirty more promising to come when the schools they are teaching are finished. The State Normal at Emporia had but forty-three the first year, ninety the second, one hundred twenty-five the third, and it was the seventeenth year before they had two hundred enrolled, so the western branch feels elated over its success.

Prof. H. M. Cottrell, formerly professor of agriculture at this institution, has accepted a position with Mr. E. M. Cook, Odebolt, Iowa, as superintendent of the seed department on Mr. Cook's 7,360-acre farm. Professor Cottrell left Mr. W. Vrooman's ranch April 1. His family will move about the middle of next month. They will put out four thousand acres of pedigreed seed-corn this spring. This farm is divided into four sub-farms, each having equipment for carrying on farm operations. There is a large central plant, composed of buildings and equipment valued at \$80,000 to \$100,000, and \$20,000 will be expended this coming season for a chemical plant and other fixtures necessary for analyzing corn. There are 1069 head of cattle, 3500 head of hogs, nearly 200 teams, and a large flock of sheep on the farm at present, which will be added to and developed as fast as possible.

The building committee of the Board, consisting of Regents Berry, McDowell and Nichols, was in session last Wednesday and Thursday to make arrangements for the many building operations of the College, provided for by the last legislature. It was decided to invite architect J. G. Holland, the builder of the Topeka auditorium, to prepare plans for the new chapel, and to build on a general plan similar to that structure. The other architectural work—the planning of the new creamery building for the College, of the new boarding hall of the Hays Branch Experiment Station, and the new barn for the same Branch Station-was turned over to Professor Walters. The professor will also superintend the erection of all the buildings, and have general charge of the repairs, for which an appropriation of \$5,000 has been made. The new waterworks will be discussed and provided for at a later meeting. The total cost of completing these building improvements, exclusive of the new waterworks, for which an appropriation of \$10,000 has been made, will be over \$70,000. addition there will be expended about \$3,000 for improvements and additions to the present heating plant. It is intended to dig a tunnel from the new chapel building straight through the hill to the boiler-house and supply all the buildings south of the Girl's Gymnasium with steam from this tunnel. All of this work will be done during the ensuing school year.

The Farm Department has sown several varieties of spring wheat and twelve or fifteen varieties each of oats and barley, being the standard varieties of these grains which are recommended for growing in Kansas. The department has received a dozen or more samples of corn from Kansas growers in answer to bulletin 120. Several of these varieties appear to be very promising and compare very favorably with some of the samples of thoroughbred corn which have been received from eastern growers. Some of the varieties received are described as having been grown on the same ground for fifteen or twenty years. It would seem that such corn must be well adapted to Kansas soil and climate and ought to make good material for breeding up our Kansas corn. Forty or fifty varieties of corn have been received from different seed firms. All of these varieties will be planted in a comparative trial on the Station grounds.

ALUMNI AND FORMER STUDENTS.

- R. G. Lawry, senior in 1901, has returned to finish the course this term.
- F. W. Dunn, '84, is now at Magdalena, Sonora, Mex. He is still interested in mining.
- C. C. Smith, '94, and Mrs. Smith are happy in the birth of another daughter, April 1, 1903.
- W. H. Olin, '89, contributes an article on "Indian Corn and its Improvement" to Farm Economy.
- K. C. Davis, '91, principal of the Dunn County (Wis.) School of Agriculture, has written lately for material and suggestions in regard to establishing a corn-judging school.

Marietta Smith, '95, is a member of the graduating class of the training school of the Denver Homeopathic Hospital. The commencement exercises occurred Wednesday evening, April 8, 1903. Miss Smith is well fitted to excel in her chosen work.

Philip Fox, '97, writes from Williams Bay, Wis., where he is working at the Yerkes Observatory. He says, "I am plugging away here trying to acquire a smattering of astronomical lore. I am working along a variety of lines. I am here primarily for solar work, but am measuring some stellar fields with the micrometer, and also doing some work in spectroscopy."

Mrs. Agnes Fairchild-Kirshner, third year in '81, with her husband, attended the unveiling of the window placed in the Congregational church as a memorial to her father, ex President George T. Fairchild. A reception given her Monday evening, April 13, at the residence of President and Mrs. Nichols, was attended by a large number of her old friends. She spent Tuesday forenoon visiting the College, finding many reminders of the past as well as evidences of growth. During her stay she was the guest of Mrs. Willard.

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No. 27

IN MEMORY OF EX-PRESIDENT FAIRCHILD.

THE memorial and dedicatory service at the Congregational church Easter afternoon was the consummation of a project undertaken last October by the ladies of the Congregational church to place in the building a memorial window to Dr. George T. Fairchild, who, during his eighteen years as President of the Kansas State Agricultural College, was a faithful and helpful The design for the window was selected member of this church. by Mrs. Fairchild, in the studio of Messrs. J. & R. Lamb, of New York City, and was executed by them in a thoroughly satisfactory It is a figure of Christ, with slightly extended hands, standing amidst the lilies, against a background of hills and sky, and expresses the sentiment of Matthew 11:28, "Come unto me all ye that labor and are heavy laden and I will give you rest." All of the details are beautifully worked out in rich and artistically blended colors, and the light transmitted through the glass imparts an illumination that gives much of the quality of the living face and figure.

It was the special desire of Mrs. Fairchild that the unveiling take place on Easter Sunday. As the window did not reach here until the Friday previous to Easter, it was not possible to give notice through the local papers of the special service to be held at 2:45 P. M. While this prevented many learning of the matter who would have been glad to attend, the church was crowded with those who came. The church was beautifully decorated for Easter with palms, ferns, and other plants, and a few callas and Easter lilies that were effectively placed among the greenery; and for this occasion the large crayon portrait of President Fairchild was borrowed from the President's office at the College. It stood on an easel facing the audience, between the memorial window and the pulpit, and the frame was almost covered with beautiful cream roses, white carnations and ferns.

The following program was rendered:

Hymn, "Home of the Soul," Choir
Scripture Reading, Psalms 121, and Prayer, - Rev. O. B. Thurston
Solo, "Beyond the Mystic Sea," Mrs. M. D. Hofer
Address and Unveiling of the Window, Rev. R. M. Tunnell
Address, Pres. E. R. Nichols
Hymn, Naomi-"Father, Whate'er of Earthly Bliss," Choir
Address, Mr. W. W. Hutto, class of '91
Address, Prof. J. T. Willard, class of '83
Solo, "The Silent River," Mrs. M. D. Hofer
Benediction, Rev. R. M. Tunnell

Mr. J. W. Shartel, of the class of 1884, of Oklahoma City, Okla., had planned to be present, but at the last moment was prevented by urgent business.

The music rendered was all selected by the family, with the exception of the first solo, "Beyond the Mystic Sea," the words of which were written especially for this service by Mrs. Laura E. Newell, of Zeandale, to music composed by her for another occasion. "The Home of the Soul" was a favorite hymn of the President's, and the second hymn, "Naomi," has been sung at family weddings, christenings and funerals for three generations, so that in the family it is called the "Fairchild hymn." At the President's request, "The Silent River" was sung at his funeral, at Berea, Ky., March 20, 1901.

Mrs. Hofer, in years past, often gave much pleasure to President Fairchild and his family by her beautiful music, and it was highly gratifying to the family to have her sing on this occasion. The words of the solos follow:

BEYOND THE MYSTIC SEA.

Beyond the sea, apast the years,
'Mid fields of fadeless bloom,'
He rests beyond life's toils and tears,
Its trials and its gloom.
There, anchored safe within the vale
Abides, where all is light:
Dwells where may reach no stormy gale,
Beyond the shades of night.

CHORUS-

Beyond the sea, death's mystic sea,
He dwells in realms more fair,
'Mid transports of eternity,
A crown of light to wear.

We may not see his kindly face
Nor hear his voice again,
Until is run life's weary race,
And done, its sad refrain;

We may not grasp his friendly hand In greeting as of yore; But we shall know and understand Upon the other shore.

Some day, some golden day, we know
A summons low and sweet
To us shall come, and we shall go
Our waiting ones to greet.
Till that glad morn, dear friend, adieu;
In memory thou shalt abide
As one revered, loved, honored, true,
Whose counsels safely guide.

THE SILENT RIVER.

When for me the silent oar
Parts the silent river,
And I stand upon the shore,
Of that strange Forever,
Shall I miss the loved and known?
Shall I vainly seek mine own?

Will the bonds that make us here
Know ourselves immortal,
Drop away, like foliage sear,
At Life's inner portal?
What is holiest here below,
Must forever live and grow.

He who on our earthly path
Bids us help each other,
Who, His Well-Beloved hath
Made our Elder Brother,
Will but clasp the chain of love
Closer, when we meet above.

Therefore dread I not to go
O'er the silent river.

Death, thy hastening oar I know,
Bear me, thou life giver,
Through the waters to the shore,
Where mine own have gone before!

Rev. O. B. Thurston, pastor of the church, conducted the service and introduced the speakers in a peculiarly happy manner. Rev. R. M. Tunnell, now of Kansas City, Kan., who was pastor of the church during many of the years of President Fairchild's residence here, was the first, and spoke, in part, as follows:

"Friends, I am embarrassed with a flood of memories. I seem to see that gentle and wise presence who was one of us for eighteen years, and who so often sat here in our congregation. We come this afternoon to pay our tribute to Doctor Fairchild's memory. When our friends see this memorial, we want them to remember what manner of man he was. Others will speak of him as scholar, teacher, administrator, Christian, no doubt. I shall speak of him as a man; shall mention a few of the characteristics that made him to be remembered with gratitude and love.

"The first characteristic that I shall mention was, in my judgment, one which is always found in great men: power of will. Not that he was demonstrative. The greatest powers of nature, and human nature, are gentle, mute. I have no doubt that his associates and the young men and women who studied under him can testify to the quiet, determined, persistent influence of Doctor Fairchild. His influence was like that of the sun, or like gravitation; it was never a hurricane, nor a thunder-storm. And you will agree with me that the will is the very spinal column of manly character. God has little use for men of no convictions nor will power.

"The next trait of Doctor Fairchild I shall speak of was the dominant power of conscience. We need not say that he was infallible. But once let reason pronounce to him that a certain course was right and he, like Luther, was ready to say, 'Here I stand; I can no more, God help me!' Of such men are leaders, heroes, martyrs made.

"He was tolerant of those who differed from him; gentle, but firm, with those who were wrong; patient with those who were ignorant. I am sure he would rather one differ from or oppose him on reasoned and conscientious grounds than to take his opinions on mere authority.

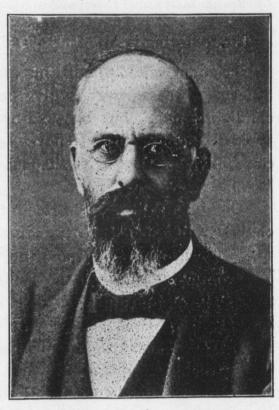
"I may say something of him as a father. I heard one of his sons, in a Christian Endeavor meeting, in which the members were telling for what they were specially thankful, say that he was greatly thankful for having a gentle father. Young people are not generally aware of the truth that to have a father and mother such as that young man had is indeed the greatest gift of God. And it is to the memory of this man, Christian, educator, we to-day dedicate and now unvail this memorial."

At the conclusion of Reverend Tunnell's address, the flag with which the window had been concealed was dropped. Pres. E. R. Nichols then spoke as follows:

"It was my pleasure and privilege to work with President Fairchild for seven years, and those probably the most trying years of his life. There were rumblings during all this time—warnings of what was to come. Yet in all this time he was the same

kind, calm, deliberate, upright man; never too busy to listen to the smallest complaint, never too weary to give thought to the most weighty matters. We all knew how well he had learned that saying he repeated so often in chapel, 'Learn to do what you don't want to do at a time when you don't want to do it.' What a lesson on duty is told in those few words.

"In 'Bitter Sweet,' Mary wishes for innocence, and John replies, 'Innocence, you will find it in the cradle, nowhere else;' and so with mere pleasure. One who seeks only selfish pleasure will always be a child. We must learn the



GEORGE T. FAIRCHILD

lesson that he learned and taught—that the highest pleasure comes from doing our duty day by day. 'When duty grows thy law, enjoyment fades away.' Yes, enjoyment may fade away, but it will give place to pleasure, even if that 'pleasure be born of pain.' Most of you knew him-knew that kindly smile, knew that sympathetic look, knew that warm, manly handshake-yet 'the best portion of a good man's life are his little, nameless, unremembered acts of kindness and of love.' This memorial window as we look upon it, the best day of the week, may help us to recall some of those unremembered acts of kindness and of love. But President Fairchild will live long after this building shall have passed away. He lives to-day in the lives of hundreds of students who learned of him. Indeed, there is hardly a person in this State that has not directly or indirectly felt the influence of his eighteen years' service here. This will go on and on in ever-widening circles.

"With this thought before us do we realize the responsibility of living? President Fairchild lived well—a pure, Christian life, a life full of trust and hope.

"All things that are on earth shall wholly pass away,
Except the love of God [and man] which shall live and last for aye."

The following is Mr. Hutto's address:

"I am not asked to talk this afternoon because of any peculiar fitness or word power to give proper tribute to President Fairchild's memory, but because of the facts that I represent the typical student, without purse, pull, Faculty favors, or unusual capability, and that, with thousands of others like me, I loved our President.

"Coming, at the age of fifteen, from an extremely rural section, clothed with verdant awkwardness and plenty of inexperience, it was not unnatural to regard the, then, few buildings on the College campus as collossal, the seniors as princes, the professors as supernatural, and the President as a semigod. With many men it would have been best to have never known them better. As the years came and went and I had occasion to meet and recite to the President, opportunity was offered for him to fall in my esteem. As I became conscious of his human attributes, realized that he had an intenseness that subjected him to all temptations that were mine, then appreciated his supreme command of himself, his control of the student body, his sway of co-workers and regents by sheer logic, hard sense and right standards, he rose above the mere supernatural and became my ideal.

"Personal contact with such an ideal must and has set in motion ideas and influences that will last longer than the glass in this beautiful memorial window and makes Kansas debtor for a better type of citizenship. No other hand but mother's was ever placed on me with so much restraint, and no one ever seemed more cruelly determined to thwart my desires, at times, than our President. One of the greatest joys of my life was to let him know later that I understood his silence and seeming unkindness at one time, absolutely for my ultimate good.

"John, Tom and Will sat at their studies. The day was done, and copied lectures from President Fairchild were being reviewed for the last time. Our lectures had been of matrimony and the family ties, and ideal family relation. Without personal reference,

the President had taken a leaf from the chapter of his own home life, covering the space of a day. He simply talked what we realized he was living. We discussed the notes, then fell into silence. Presently Tom said: 'After all, he is right; you can't get around a truth plainly in existence. He's right, and I shan't be satisfied until I get a woman from this institution who has had his teaching, thought these thoughts, imbibed this ideal, and can know and understand what he has said to day. Oh, how I wish I could tell him, so he would believe me, how much I love him.' He told of his esteem later and is now living the life that will help perpetuate the characteristics given by one of God's noblest of human beings."

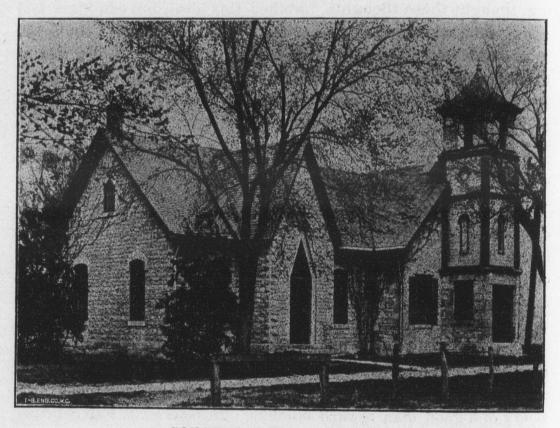
The following address, by Prof. J. T. Willard, was then presented:

"I regard it as a great privilege to be allowed to speak here today concerning President Fairchild, but in the short time allotted it will be impossible to touch upon all the prominent traits of his character. I shall therefore limit myself to a consideration of a few that appealed most strongly to me, leaving to others those that impressed them more.

"In the well known line, 'The proper study of mankind is man,' the poet expresses a deep philosophic truth. The study of a great man can but lead the student toward greatness; the study of a good man toward nobility. In George T. Fairchild we had a man both good and great, and a consideration of some of the salient points of his character may serve not only as a tribute to his memory but as a lesson to ourselves.

"I account it one of the greatest privileges of my life to have known President Fairchild well; I cannot say intimately, for natures of such depth and height as his can be known intimately but by very few. That he was a good man none will deny; that he was truly a great man is my sincere conviction, which the process of time only strengthens. What were elements of his character that contributed to this eminence? I am inclined to place first, as at least one of the most fundamental of his gifts, his power to discern character, to read human nature as expressed in the limitless variations of the face, form, voice, movements and habits of the individual. No one can have been associated with him even slightly without seeing that he was an accurate

observer of men and women, boys and girls, and an acute interpreter of their characters. I can not now recall a single instance in which he was deceived. While yet in the president's chair, some of us were inclined to the belief that he allowed himself to be deceived in a few instances, but the frankness of post-official conversation showed that there had been no misconception, but



CONGREGATIONAL CHURCH

rather a generous and self-sacrificing attitude, and a realization of the universality of frailty. This close and correct analysis of individuals enabled him, as it does every one who practices it, to adapt himself to a condition; it made him firm and unyielding, caustic, argumentative, persuasive, gentle, conciliatory, or even flattering as the situation warranted or required, yet never in any of these attitudes overstepping the bounds of dignity, honor, truth, and courtesy. He not only knew his fellow men; he knew himself. In fact, one who does not know himself, whom he can study most completely, cannot perfectly understand others.

"A recent writer has said that ability is rare, but the ability to recognize ability much rarer. President Fairchild's power of character analysis gave him this rarer ability. In the members of the College Faculty he recognized the defects of each, far more

than many of them imagined, but against these he set their merits, and reached a resultant judgment of great accuracy. He had a calm and unprejudiced estimate even of men who were counted as his opponents or his enemies. Too many of us are blind to the defects and weaknesses of those we like, and to the merits and strength of those we dislike. He made no such mistake. Knowledge gave him power, and he realized that there is no more seductive or more fatal error than to please one's self by self-deception.

"His understanding of people gave him a toleration and breadth very uncommon in a minister twenty years ago, and this breadth of view is another evidence of his greatness. His own religious experience was such as to give him full sympathy with the most devout; at the same time his understanding of the human mind was such as to enable him to realize perfectly the mental state of those who differed entirely from him, and to have no condemnation for any sincere soul, whatever his belief. He was even condemned by the narrow as 'no better than an infidel,' because he was too large to believe that the dark ages possessed all religious truth. In the storm and stress of the two decades in which the development theory of the origin of species was establishing itself, he was undisturbed by it. His clear vision saw that no study of the manner of creation need for a moment disturb the consciousness that there is above, within, and working through it all an infinite, incomprehensible power, which he believed, as most do, to be working throughout endless ages the happiness of sentient creation. He said that if it be true that man has originated from some lower form of animal life, the fact does not degrade man, but should elevate our view of animals.

"His understanding of human nature was an element not only in the immediate relations of life, but in his views upon the large questions of sociology and political economy. Upon such questions, always hot with the blows of controversy, it is not my purpose to enter, further than to testify that President Fairchild was as nearly nonpartisan as one could be and be a man of thought and opinion. He considered public questions on their merits, and without reference to the attitude of any political party. He differed from some, however, in one vital particular, namely, he insisted upon considering the relation of a system to men and women as they are, not as they ought to be, or may be some thousands of years hence. Failure to do this is the gulf into

which so many optimistic, high-minded, enthusiastic but impracticable reformers have fallen.

"President Fairchild's analysis of character and broad toleration enabled him to enter into complete sympathy with others; that is, he understood them, could put himself in their places and see matters from their points of view. This is one of the largest elements in greatness. He who has not broad sympathies can never compass a great work for humanity. He who has not a deep understanding of others can not accomplish much with them or for them.

"One of the most important of President Fairchild's powers was his capacity for close, clear thinking. He had so schooled himself in seeing things as they are, in analysis or argument on great subjects as well as in the petty daily experiences, that he could strike sophistry at the vital point with unfailing certainty. He who entered into an argument with him must be thoroughly grounded on the truth of the matter, and have his allegations fitted logically together, if he did not want the incident to close with a question from President Fairchild that showed as by a search-light the fallacy of his position. The importance of clear thinking he always emphasized; in fact, he regarded education as largely a training to think. This is, of course, the common view, but it is rarely that such good examples are furnished of the clear action of a trained mind as the associates of President Fairchild saw in him. We have many who think they think, but whose weakness when opposed to a real thinker often becomes apparent even to themselves. President Fairchild's logic was usually convincing to his auditors. It was least so when it concerned the intangible, when it was used to convince an unwilling listener of the error of his conduct. Yet, here it was no less perfect; it was less uniformly effective because of the difficulty of raising some offenders to the high ground on which he stood.

"It is perhaps too early yet to make a dispassionate estimate of the success of President Fairchild as the head of the Agricultural College. That he achieved a great and lasting success I think all will concede, but with the great variations in view concerning education in general, and the special functions of the Agricultural College in this State, there can, of course, be no unanimity of opinion concerning the degree of that success. This can be safely said, that those who are most familiar with his administra-

tion entertain the highest opinions of it. The severest, the even brutal criticisms that have been arrayed against it show, to us who know the truth, that their authors are densely ignorant of the subject. It was not perfect; none knew that better than he did himself. The difficulties of the position during the last five years of his service have been realized by very few, and were such as seriously to hamper progress that might have been naturally made under more favorable conditions. His ideal was a broad education for the men and women of the agricultural classes. For this State he did not regard it as of anything like as much importance to have a technical engineering course here. He believed, however, that in time such a course should be provided, and made no adverse comment upon its establishment by his successor.

"In his views relative to an agricultural course he differed from some. He believed that it should embrace technical agriculture, including the actual performance of farm and garden operations; but he believed in much more. He looked upon the institution in his charge as a college, not merely as a trade school. As a college he insisted that the course of study give a broad and deep foundation through study of physics, chemistry, botany, entomology, physiology, geology, English, mathematics, etc., without which one is unable to understand and apply the so-called practical branches of agricultural technique. He knew that by training the young man in the sciences which found application in that most complex of all arts, agriculture, he was fitting him to grapple intelligently with the daily problems of the farm far better than could be done by any amount of rule-of-thumb information that could be dealt out ready for use. He wished first to have the young man taught to think, and trained in thinking. Treatises on agricultural practice could then be understood and utilized by simple reading. From his very first term the student was made more capable as a farmer, if he returned to the farm, even if agriculture under that name had not been part of his instruction. The longer a student remained the greater the increase in his capacity. Even if in the progress of events the student should not return to the farm, either before or after graduation, he would have received training and impulses that would last through life, making him a friend to agricultural interests, and of direct value to them though not himself a farmer. He once said that the purpose of the College was not merely to make men farmers but to make farmers men, and in this he had in view all of the channels, direct and indirect, in which the condition of farmers may be elevated. The breadth of training which his ideal included is still the dominant feature of the agriculture course in the College he served so long.

"In the administration of the College, President Fairchild was democratic in a high degree. The Faculty met weekly, and in all matters belonging to the Faculty as such, viz, course of study, relations of individuals to the course and general discipline, action of the Faculty was always decisive, and he held it to be binding upon him. Some have said that he was an autocrat toward the Faculty. Nothing could be more untrue. The Faculty usually, though not always, voted as he would have decided himself, but he ruled by the rectitude of his motives, the clearness of his perceptions, his keen analysis of problems, and his invincible logic. He carried the Faculty with him through the greatness of his nature.

"Time does not permit me to consider all of the elements that contributed to President Fairchild's success. One other, however, I must touch, and that is his careful consideration of all, from the highest professor to the lowest student. He seemed to carry them all in his mind, and the kind words of appreciation and encouragement, or it may be the equally kind admonition or warning, came daily to some one. This knowledge of all was less complete as the advancing years brought larger bodies of students, but to the last he endeavored to know every one. When differences arose between College officers, his careful analysis of the situation and consequent just decision were, almost invariably, cheerfully accepted, and cordial feeling among all preserved. He saved friction and dissatisfaction by constantly holding in mind the relation of each officer to all, and seeing that the interests of none suffered through thoughtless or conscious favorit-The little courtesies that mean so much many times were never forgotten, and they fostered and preserved the love and respect of the entire official family.

"Nothing tests the greatness of a man like adversity and injustice, and at no time did the character and personality of President Fairchild stand revealed in greater strength and majesty than during the trying days and weeks six years ago. In the excitement

and anxiety he was the least affected. He felt that his work had been well done; that the last few years had been ones of worry, and that what was best in the College as he left it would endure. While lesser men were wrought up to feverish and unjust denunciation, he was calm and judicial; while enemies were vilifying him he was accounting for their attitude. At Commencement time the Alumni Association held a special farewell reunion which is fadeless in memory, and here, as always, President Fairchild was strong, serious, gentle, and self-contained. While others wept in grief he stood composed, happy in the consciousness of the love and respect of the scores assembled; happy in the belief that good would work out of seeming ill, and without a word of bitterness on his lips or in his soul. Surely he approved himself not only a good man but a great.

"He is gone. Some never saw that kind, strong face again. To day we meet in unity of heart to dedicate a beautiful window to his memory, fit symbol of the beauty, clarity and purity of his soul; but for those who enjoyed the precious privilege of his friendship no other memorial can compare with that wrought in intellects stimulated to a greater love of truth, in hearts made more deeply sympathetic, and in souls inspired to greater reverence for the eternal verities."

None of the speakers attempted to give anything approaching a complete delineation of the life and character of President Fairchild, but each spoke of a few salient characteristics, as his life had most strongly appealed to or impressed itself upon him. They paid high tribute to the conscience, gentleness, strength, self control, justice, broad versatility and dignity of the man, whose exemplary life impressed itself upon all who met him and to whose wise and sound policy is due in so large a measure the efficiency and success of the educational institution on the hill.

The occasion was an impressive one that renewed the love and reverence of the many old friends present, and to strangers brought a deepening of esteem for this man whose character had so impressed his associates. In the minds of those who know the family well, the thought of the President is closely associated with that of his gentle and estimable wife, Charlotte P. Fairchild, and her benign face came to the minds of many on this Easter afternoon. Sincere regrets were expressed that she was unable

to be with us, but we hope to have this pleasure at some future time. Mrs. Agnes Fairchild-Kirshner and her husband, of Kansas City, were present, and she was wholly satisfied with the window and deeply touched by the evidences of the far-reaching and beneficent influence of her cherished father, Dr. Geo. T. Fairchild.

LYDIA G. WILLARD.

ALUMNI AND FORMER STUDENTS.

S. B. Newell, of Zeandale, left for the Yankton Indian Training School at Greenwood, S. D., last evening. Mr. Newell took the civil service examination last October, but just recently received the appointment to the government position, as teacher in the Indian school. He graduated from the Agricultural College here in 1897.—Republic.

In a special issue the Salt Lake Tribune gives a voluminous exposition of the accomplishments and the possibilities of Utah and the adjacent states. Nearly two pages are devoted to the Agricultural College of Utah, a liberal portion of which is contributed by Dalinda Mason-Cotey, '81, professor of domestic science and arts in the institution. Her article is an extremely well-written one, not only as a description of her department and its work, but as a statement of the important place in social economy filled by such training as it gives. 'The years of her service there, and the development of the work under her direction, are ample testimony to her efficiency and success.

Mrs. Lydia G. Willard, fourth year in 1884, contributes a full account of the recent exercises in connection with the unveiling of the window just placed in the Congregational church in memory of ex-President Fairchild. The initiative in getting this window was taken by Mrs. Willard, but in the solicitation of funds she had the valuable cooperation of Mrs. Nellie Kedzie-Jones, '76. The memorial is an expression of the love and respect of many relatives and friends, to join with whom would have been an equal pleasure to many more. We are about to erect a new chapel, and the thought has come to many that it would be especially fitting if it should contain some suitable memorial to the man who guided the destinies of the College for so many fruitful years.

The portrait of Ex-President Fairchild in this number is from a photograph by Amos; the cuts of the memorial window and of the church are from photographs made by Dr. S. C. Orr.

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보이라면 하면 보고 있다. 이 경우 마이트 전에 대한 경우 나는 사람이 되었다. 그런
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No. 28

THE REVISION OF THE COURSES OF STUDY.

7ITH the progress of the State it is to be expected that from time to time changes in the courses of study offered here will be required in order more fully to perform the function of an institution in which the chief aim is to furnish "a liberal and practical education to the industrial classes." That the education contemplated by the organic act was to be both liberal and practical is sometimes lost sight of. The courses underwent revision three times during the two years 1897-1899, but for the last four years have remained practically unchanged from the form given them by a committee of the Faculty appointed by the Board of Regents, May, 1899. This committee consisted of the professors of agriculture, domestic science, mechanical engineering, English, mathematics, botany, physics, and chemistry, viz., Professors Cottrell, Stoner, Harper, Ward, Winston, Hitchcock, Nichols, and Willard, respectively. Professor Nichols was designated chair-This committee, it will be seen, well represented the chief interests of an industrial educational institution, and the little occasion for change during the last four years testifies to the satisfactory character of its work. Those passed upon by this committee were the Agriculture, Domestic Science, Mechanical Engineering and Science courses. In 1900 the Electrical Engineering Course was established as a modification of that in Mechanical Engineering.

The most important features of the revision of 1899 were (1) a reduction of the time given to history and economics, so as to better balance the work, (2) the addition of four studies to the requirements for entering upon the first-year work, and (3) postponing the student's choice of course until the beginning of the second year, the first year being the same for all with only such differences as difference of sex requires.

In respect to the first point, while much time was and might still be given to argument, the approval of the majority has been given to the courses, and if we may judge by the courses of similar institutions elsewhere, the action then taken would meet the approval of the country at large as well as that of our own State.

The second point met with the most opposition, and was approved by the Board of Regents only after considerable discussion and with much doubt as to the outcome. As preparatory studies are taught here, however, the outcome has fully justified the committee; there is no real gap between the country schools and the College courses; there has been no falling off in the number of students entering College, but rather a large increase, especially an increase in the number of students taking advanced standing; and although the requirements for graduation were advanced there have been no cases of failure to graduate on this account.

The third feature noted above has been amply justified by the results. After all possible has been said in favor of elective courses, the fact remains that young people just from the farm lack the knowledge and experience necessary to enable them to choose wisely. Men and women can choose for them better than they can choose for themselves. After a year in College, with duties giving them some insight into the nature of the several courses and the facilities of the institution, the students choose more wisely than they could have earlier. The statistics show that from year to year the General Science Course is getting fewer students and the technical courses more.

With the lapse of four years, changes of conditions indicated the possibility of improvement of the courses in some particulars, especially by the introduction of additional laboratory work, and the Faculty, at the suggestion of the President, voted that a committee be appointed to prepare revised courses and submit them to the Faculty for discussion, modification if need be, and recommendation to the Board of Regents. The President appointed the following: Professors Willard, Brink, Remick, McCormick, McIntyre, Popenoe, Otis, Mayo, and Eyer, from the departments of chemistry, English, mathematics, mechanical engineering, domestic science, zoölogy and entomology, animal husbandry, veterinary science, and physics, respectively. President Nichols acted with the committee also.

As the courses will appear in detail in the catalogue, it is not the purpose of the present article to exhibit all of the changes, especially such as are merely changes of position in a course. It is undoubtedly true that the present courses are as heavy on the whole as students can be expected to carry. The introduction of anything new, requiring much additional effort, must be accompanied by a corresponding elimination of something. The revised courses are based upon the transfer of another term of algebra, a term of English readings and one of free-hand drawing to the requirements for the freshman year. The work in general history is to be compressed into two terms instead of three. The instruction in oratory in the junior and senior years has been changed so as to consist of a weekly exercise for each student throughout those two years. These exercises are to replace the Saturday afternoon chapel speaking and the class exercises included in the present course.

Most of the changes in the courses are made possible by the openings created by the action indicated in the preceding paragraph. A term of elementary projection drawing has been added to the spring term of the freshman year. In the winter of the same year a term will be given to English structure. This is really a restoration of work that was in the course up to four years ago. In a school where no knowledge of languages other than English is required, it seems especially important that some direct study of the structure and derivation of English words should be given. It is believed that this study will add greatly to the student's understanding of what he reads, and assist in other ways to repair the weakness in English which so many of our students betray.

The time made available by the abandonment of the Saturday afternoon chapel exercises is in part to be utilized as follows: The lectures on hygiene given to freshmen at 7:50 A. M. under the present course will, in the future, be given Saturday afternoons in the fall term. In the winter term they will have a course of lectures in practical psychology which is designed to give instruction that will be a material aid to them in forming correct mental habits, thus assisting them throughout the entire course. During the fall and winter terms the sophomores will receive practical instruction in the use of the library. Many students never become aware of the wealth of material available to them in books, and many who know of its existence never learn how to extract it. This the Saturday afternoon lessons will attempt to correct.

Above the freshman year the changes vary with the different

courses. In the engineering courses, differential equations have been added, and certain technical studies. Perspective and axonometric drawing have been cut out, and considerable rearrangement effected. The junior year is now to be somewhat heavier than in the old courses, while the senior year will be lighter. The latter will consist almost exclusively of technical branches.

In the Agriculture Course, the subject of breeds and breeding has been divided, giving a term to animal breeding, and another to breeds of live stock, the latter accompanied by stock judging. Instead of a half term for chemistry of foods, and a term and one-half for stock feeding, the revised course will give a term to animal nutrition, and another to stock feeding. A term will be given to agricultural physics in the spring term of the senior year, after the completion of the regular work in pure physics. A term in farm architecture has also been added.

In the Domestic Science Course, trigonometry is made a requirement, the experience of the last three years having shown the great need of it in some of the other branches, especially physics. Home architecture is extended to a full term, as is also chemistry of foods, the latter to be designated as human nutrition. Demonstrations is replaced by household economics, and a number of rearrangements have been made which absorb the elective hitherto in the course. In this course, and also in the General Science Course, the term lost by general history has been filled by the addition of a term of American history.

In the General Science Course, an additional elective term has been placed in the spring term of the junior year. This is left as a free elective, while, as at present, the three electives in the senior year are expected to be a single line of closely allied studies. Those electing higher mathematics, however, must begin with analytical geometry. The study of foods and nutrition is extended to a full term of human nutrition, with the option of taking animal nutrition instead, if the student desires.

Considerable additions and changes have been made in the laboratory and industrial work required. The completion and equipment of Physical Science Hall makes it possible to give the long-needed laboratory work in connection with physics. In elementary physics, two and one-half hours per week will be required, and in the advanced physics as much or more, depending upon the course. In chemistry, the laboratory work of the

first two terms is extended to five hours per week, that of the third term is left unchanged, viz., seven and one-half hours, and five hours are to be required with the agricultural chemistry. Field work has always been required in botany, but is now to be definitely stated as two and one-half hours per week, and an equal amount of laboratory work will be required with plant diseases and plant breeding. Two and one-half hours per week of laboratory work are also added to entomology, physiology, and crop production, the last taking the form of grain judging. In the Agriculture Course, in addition to that definitely designated, three terms of industrial work in agriculture are provided, in which the student may elect it in agronomy, animal husbandry, or horticulture. The dairying industrial, which has been given on Mondays heretofore, has been placed so that it will be taken during the regular academic days, it being the desire of the Faculty to leave students with one day free from College duties, and not to impose more inconvenience upon the students of one course than upon those of another. In the Domestic Science Course, a term of laundering has been added, and the free industrial hitherto existing in the second year will be devoted to work in color and design.

The short courses also received attention. The experience of four years has shown that we have been undertaking to teach too much in these courses in the time allowed, and with the limited preparation that the students have. In the revision, therefore, the first consideration was a reduction of the requirements by cutting out some of the studies. Chemistry was dropped, as it has proved to be impossible to give any useful insight into it as a science in the one half term allowed. It is expected that in the Farmers' Short Course, a few practical lectures, giving the necessary definitions and explanations concerning plant food, will be given at the beginning of the course in crop production, and concerning feeds and the functions of their proximate principles at the beginning of the course in feeds and feeding. In a similar manner it is planned to give some information in respect to the control of insect pests in connection with horticulture, and such consideration of bacteriology as is needed will come with the study of the diseases of farm animals. A term in farm machinery and farm management has been added. In the industrial work, stock judging and grain judging have been added, and the opportunity to take traction-engine running will be given. The studies dropped are: One term of orchard treatment and pomology, and one-half term each of chemistry, entomology, bookkeeping, bacteriology, dairying, and farm architecture. Instead of the term of breeds and breeding, a term will be given to breeds of live stock; the following branches will be studied for a full term instead of a half term: Diseases of farm animals, crop production, horticulture, and physics. The horticultural line in the second year is abandoned, as there had been almost no demand for it. For those desiring it, a Farmers' Dairy Course is offered which differs from the other only in giving dairying instead of horticulture.

The Dairy Course was completely transformed, and is designed to meet the needs of creamery and skimming station operators. It includes one half term each of bookkeeping and diseases of dairy animals, and a term of each of the following: Dairying, feeds and feeding, butter and cheese making and dairy management, dairy practice, and boiler and engine.

The Domestic Science Short Course has been lightened by the elimination of chemistry and physics, and the transfer of vegetable gardening and floriculture from the first year to the second. Physiology and hygiene replace bacteriology and physiology, and the instruction in home sanitation and household accounts will be given with other work. The necessary chemical definitions are to be given in the lectures in cooking.

Educational problems are not altogether solved; should they be, it could be only for a brief period; changing conditions must ever involve corresponding changes to meet them. Industrial education is a matter of comparatively recent time, and its peculiar problems present difficulties that have not been wholly met-That culture can, to a certain extent, not only accompany technical training, but be given by it, seems undeniable; the extent to which this is true is not yet demonstrated. That so called practical studies are all that is necessary is a proposition that is specious, and its plausibility makes it all the more dangerous. Only those with some breadth of training and of experience in life beyond the mere struggle for existence really know the pleasure that surpasses that of the material only. The revised courses now offered to the youth of the State are confidently believed to be better than any previously available here, and to compare favorably with those offered anywhere, in their combination of liberal and technical studies, mental discipline and manual training, science and practice. J. T. WILLARD.

FARMERS' INSTITUTES.

THE Kansas State Agricultural College has always recognized the farmers' institute as a favorable means to disseminate newly discovered facts and methods pertaining to agriculture and horticulture among those directly interested. Short conventions of the farmers of the vicinity of Manhattan were held at the College every few months as far back as 1864. The first wellorganized and widely-advertized farmers' institute under the auspices of the Faculty was held in Manhattan during January, It was attended by representative farmers from all parts In the early seventies several institutes were of the State. held at the College, covering from three to five days, attended by such specialists as Chas. V. Riley, Dr. W. H. Howsley, Joseph Bushman, Wm. Muir, and the editors Murtefeld and Coleman of Colemans' Rural World. During Anderson's presidency little was done in this direction, chiefly because the newly organized industrial departments demanded the undivided attention of the teachers; but upon the election of President Fairchild, the College at once arranged for the holding every winter of at least six institutes, in as many different counties in the State, and increased the number a few years later to eight, and still later to ten. A permanent Faculty committee was appointed to arrange with parties interested, and a great deal of enthusiasm within and without the institution became manifest with regard to this practical work. The first regular institute in which the writer of this sketch took an active part was held at Clay Center in the spring of 1882. It was attended by several specialists and newspaper reporters, and by Maj. W. Sims, of Topeka, who at that time was Secretary of the Kansas State Board of Agriculture.

In the early nineties the State of Wisconsin inaugurated a new movement by establishing farmers' institutes in every senatorial district and paying for this work by a special legislative appropriation of \$12,000 per year. Minnesota followed by appropriating \$13,500 annually, Pennsylvania by giving \$15,000, and New York by setting aside an equal sum for this purpose, while Ohio decided to raise by county tax a sum not to exceed \$200 for each county. This liberality towards the farmers' institute incited prolonged discussions in the press of Kansas, with the result that in 1899, and again in 1901, the legislature appropriated \$2000 per year for this purpose, thus enabling the College to greatly

increase and systematize its work. Localities could now be visited in all parts of the State and by arranging for a number of institutes along an easily traveled route the expenses could be cheapened, making it possible to hold more institutes with the appropriation named. Between July 1, 1890, and July 1, 1897, the Agricultural College held 118 institutes at an average cost of \$18.93, while in 1900-'01 the cost had by these means been reduced to an average of \$12.82. The following table gives the figures for the past dozen years:

FARMERS' INSTITUTES.

YEAR.	Number.	Total cost.	Average cost
1890-1 1891-2 1892-3 1893-4 1894-5 1895-6 1896-7 1897-8 1898-9 1899-0	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\$254 33 251 79 264 01 342 12 398 10 336 81 386 56 489 94 464 84 2000 00	\$18 74 24 00 20 12 18 10 15 31 20 34 16 33 7 49 14 70

It will be seen that the average expenses for this work by the Agricultural College has been lowered almost constantly, the figures for 1898-'99 being due to the fact that during that year the attending Faculty delegation had been reduced from the usual two or three members to one or two members. By doubling the average of \$7.49 the figures would reach \$14.98 which would probably be more nearly correct in comparison with the others.

Up to 1897-'98 the institutes were usually held during the winter months, but the institute committee of the Faculty in that year, inaugurated the so-called summer picnic institute. The results of this change proved more satisfactory than had been anticipated. In the winter the weather is often too cold and the roads too bad for farmers to leave home; the Faculty have but little time to be away from their classes; the students can not assist in working up attendance, as they always do in the summer vacation, and the social features, such as basket dinners, exhibitions of farm products, etc., are not as likely to be successful. The attendance at some of the picnic institutes held during the past three years has often reached the thousand mark, while

gatherings of less than four hundred have been very rare. The difficulties of holding summer institutes are in the many "side shows" that usually gather at such places and the impossibility to hold the hearers to the program for a satisfactory length of time.

During the present school year the Agricultural College has conducted or assisted in eighty-eight farmers' institutes, and several more will be arranged for before July 1. As a rule, the attendance has been very good. The prosperous condition of the Kansas farmer has produced a general good feeling, which is manifesting itself in everything he does and has influenced his enthusiasm for better farming and increased mental activity.

Farmers' clubs, horticultural societies, dairy associations and the Grange have lent their assistance in making these institutes a success in every part of the State. It is estimated that the thirteen picnic institutes, held from July 15 to July 30 of last summer, were attended by over eighteen thousand persons; that the average attendance of all the institutes of that year was at least six hundred, and that the total number of persons attending the eighty-eight institutes held so far must considerably exceed fifty thousand. That such gigantic efforts must produce much good is evident.

The following is a list of the institutes held or attended during the current school year, together with names of the attending Faculty members and the dates:

				Attend-
Date		Place.	Speakers.	ance.
July		Kirwin	Dickens	
66		Burlingame	Willard and Roberts	
66		Overbrook	Mrs. Calvin	. 3000
66		North Topeka	Mrs. Calvin	
66			Mrs. Calvin and Otis	
66		Cadmus		
		Mantey	Mrs. Calvin and Otis	
6.6		Olathe	Mrs. Calvin and Otis	
66		Lyndon	Mrs. Calvin and Otis	
66		Madison	Mrs. Calvin and Otis	
66	26,	Arkansas City	Mrs. Calvin and Otis	
66	28,	Florence	Mrs. Calvin and Otis	000
"		Sibley	Webster and Kinsley	***
66		Baldwin	Webster and Kinsley	
Aug.		Irving	Webster and Kinsley	. 800
Hug.		Summerfield		. 500
66		Wathena	Walters	. 1000
66			Webster and Kinsley	. 500
		Garrison		250
66	14.	Cimarron	1 openoon in the	

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Da	te.	Place. Speakers.	Attend-
Aug	. 15.	Michigan Valley Dickens	
		Liverpool Popenoe	
		Highland Station Dickens	
		Howard Dickens	
66		Leon Dickens.	000
66		Mulvane Dickens	
66		Colby Webster.	
66			
	20,	Blue Hill Kinsley	40
	20,	Benton Dickens	500
66		Hoxie Webster	
66		Jennings Webster	
"		Canton Dickens	
	30,	Oakley Kinsley	450
Sept.	2,	Shadybrook Otis	200
"	3,	Enterprise Otis.	150
	4,	Manchester Otis	200
"	4,	Richmond Mrs. Calvin and Dickens	250
66	5,	Industry Otis	125
"	5,	Garnett Mrs. Calvin and Dickens	350
"	6,	Wakefield Otis	300
66	6,	Blue Mound Mrs. Calvin and Dickens	300
"	8,	Fulton Mrs. Calvin and Dickens	200
"	9,	Earlton Mrs. Calvin and Dickens	500
66	10,	Altamont Mrs. Calvin and Dickens	200
46	12,	Douglass Mrs. Calvin and Dickens	100
"	13,	Cale Mrs. Calvin and Dickens	100
"	25,	Meriden Otis and Webster	350
66	27,	White City Webster	100
Nov.	11,	Courtland Miss McIntyre and Otis	150
	12,	Smith Center Miss McIntyre and Otis	50
66	13,	Jewell City Miss McIntyre and Otis	•300
"13	-14,	Indian Creek Miss Minis and Dickens	100
Nov.	15,	Glen Elder Miss McIntyre and Otis	
66	20,	Girard Webster and Walters	100
66	21.	Fulton Webster and Walters	75
66	22.	New Lancaster Webster and Walters	20
Dec.	1.	Hutchinson Mrs. Calvin and Webster	100
	2-3.	Burrton Mrs. Calvin and Webster	525
66	4-5.	Hackney Mrs. Calvin and Webster	235
66	6.	Douglass Mrs. Calvin and Webster	300
66	8.	Douglass Mrs. Calvin and Webster	60
" 9	-10.	Eldorado Mrs. Calvin and Webster	25
"	11.		200
. 66	11.		30
"11	-12	Logan TenEyck and Dickens	50
"	12	Mission Center Calvin and Eyer	100
66	12	Sycamore Springs Mayo and Shoesmith	20
	13	Norcatur TenEyck and Dickens	200
66	13	Belleville TenEyek and Dickens	125
66	10,	tussell Hanev	20
66	18	Brookville TenEyck and Shaw	80
	10,	Gridley Webster and Wheeler	75

Date.	Place.	Speakers.	Attend- ance.
	Yorktown	TenEyck and Shaw	. —
	Michigan Valley	Webster and Wheeler	
	Sylvan Grove	TenEyck and Shaw	. 40
	Auburn	Webster and Wheeler	
Jn. 13-15,	Hiawatha	Miss McIntyre and Roberts	. 250
" 14,	Oneida	Miss McIntyre and Roberts	. 350
	Seneca	Miss McIntyre and Roberts	. 300
" 19,	Smith county	Popenoe and Willard	. 150
"21-22,	Stockton	Popenoe and Willard	. 200
" 23,	Cawker City	Popenoe and Willard	. 125
" 24,	Clyde	Popenoe and Willard	. 140
" 30-31,	Overbrook	Miss McIntyre and Nichols	. 150
	Cadmus		. 125
" 3-4,	Wellsville	Mayo and Miss McIntyre	. 200
	Berryton	Mayo and Dean	. 250
	Arkansas City	Miss Agnew and Walters	. 600
	Marysville	Dickens and Miss McIntyre	400
	Holton		. 30
	Alma	에 HET 그렇게 하는 데이 게임으로 보고 있는데 그리고 있는데 되었다면 하는데	. 100

Some years ago the universities of the West inaugurated the university extension work and made a good deal of ado over it. Extensive plans and programs were being published and it was expected that their work would soon reach every town in the land; but they met with limited success. To-day there is but little work done and the whole scheme has practically gone to sleep. In the meantime the Agricultural College has gone on quietly with its College extension work, pushing it into every county and making it a characteristic feature of Kansas farm life. The farmers' institute is a fixture in our State; it is a red-letter day in the almanac of our farmers and stockmen.

J. D. WALTERS.

The Agricultural College—band, battalion, students, Faculty and all—was at the Union Pacific depot at 10 o'clock A.M.. Saturday last, to see and greet and hear President Roosevelt. As soon as the train arrived the battalion formed a cordon around it and the President appeared on the rear platform, where he made a short address, directed mainly to the students. He spoke of his impressions when coming up the fertile valley of the Kaw, of the farmer as the main strength of the nation, of higher education as a necessity to the development of the country, of the need of energetic effort in every undertaking, and of his contempt for the man or woman who does not work and produce. When he was at his best, the locomotive bell reminded him of the time schedule. He bowed, the students and the multitude of spectators cheered and the train sailed up the Kaw valley toward the west. The President left a good impression.

THE INDUSTRIALIST.

BOARD OF REGENTS.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

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LOCAL NOTES.

The Commencement exercises of the Manhattan schools will be held May 21.

Ex-Regent Stewart, of Humboldt, was a visitor about College a few days ago.

Professor McKeever acted as a judge in the St. Marys high school declamation contest.

Professor Walters will deliver the commencement address of the schools of Augusta, on May 21.

Professor Brink has been invited to deliver the commencement address of the schools of Ellsworth.

Mrs. Willard and Miss McIntyre will attend the State Federation of Women's Clubs at Wichita this week.

Professor Popenoe was called to Topeka Saturday, April 18, on account of the serious illness of his mother.

Professor and Mrs. Otis gave a "May reception" to the Faculty on Monday night, at the College farm house on the campus.

Professor Mayo mourns the death of his mother, to whose bedside, at Battle Creek, Mich., he was called by a telegram last week.

Prof. J. D. Walters has received a county map of Kiowa county, Oklahoma, that was compiled and published by O. E. Noble, of the class of '97.

The College pay-roll for March amounted to \$7224.26. Of this the Faculty drew \$5224.98, the students \$1344.71, and the other employees \$654.57.

Leon W. Hartman, acting professor of physics last year, has been awarded the Tyndall fellowship in physics for next year at the University of Pennsylvania.

Professor McKeever gave an address at Mankato, Saturday evening, April 18, to an audience of county school teachers and pupils. While there he helped plan the excursion to the College, which is arranged for May 8 and 9.

Regent J. S. McDowell returned last week from Towarda, Butler county, where he purchased six Percheron mares for the College. The appropriation for the purpose of increasing the livestock herd will go this year to buy horses. It is the desire of the Regents to raise the grade to the highest standard.

Alice M. Loomis, junior last year, after completing a year's successful teaching at Ellis, May, 15, will return to the College and begin studying for graduation in 1904.

Assistant T. H. Scheffer left last Friday for Delphos, where he was principal of the public schools for seven years, to attend the graduating exercises of the high school.

The baseball game between the College and Bethany was won by the home team by a score of 9 to 8. It was very interesting, the score being a tie in the eighth inning.

The botany and entomology classes took their dinners and started for the Wild Cat valley, on Monday morning of last week, with the intention of spending the day in search of specimens.

Pres. E. Benjamin Andrews, of Nebraska State University, delivered a course lecture in College chapel last Friday night. The attendance was all the chapel could hold, and the lecture was well received.

Assistant Paull, of the Botanical Department, is preparing a "Key to the Spring Flora of Riley and Pottawatomie Counties," for the use of students in elementary botany, to replace the more difficult manual now used by the students in their field work.

Prof. C. E. Goodell, of the chair of history and economics, has resigned his chair at this College to accept a similar position in the Baptist university at Granville, Ohio. The resignation will take effect at the close of the present school year. The professor and his wife leave many warm friends at the College and in the State, who wish him success in his new work.

Smith and Jewell counties are going to be heard from in the future enrolment at the Kansas State Agricultural College. O. M. Chilcott, of Mankato, and A. H. Poppen, of Smith Center, county superintendents of public instruction for Jewell and Smith, respectively, have inaugurated a movement to make their constituencies more thoroughly acquainted with the advantages of a course of instruction in this institution by object lessons to be taught by a personal inspection of the College and its surroundings. Circulars have been scattered broadcast among the people during the last few weeks, preliminary to a grand excursion May 8, when a special train over the Rock Island will carry to Manhattan the young men and young women pupils in the public and high schools of Smith and Jewell counties, graduates of those schools, and their parents, as far as the latter can be induced to take the outing. Four hundred names have already been secured of those who will join the party and the number will probably be materially added to. The party will remain at Manhattan Friday and Friday night, May 8, the guests of the city, and on Saturday will go to Fort Riley. Returning, the special will leave Manhattan Saturday evening at 5:30 o'clock. The whole program was arranged by Superintendents Chilcott and Poppen, whose enterprise can not fail to result in much good, in addition to affording their people a most enjoyable trip.

The junior domestic science girls are getting practical work in serving dinner as a part of their regular training. A member of the class is chosen as hostess and a few guests are invited to form the dinner party. Week before last the guests were Professor and Mrs. Goodell, Professor and Mrs. McKeever, and Professor Popenoe, and last week the party consisted of Professors Walters, Brink and Rupp and Superintendent Rickman. All pronounce the dinners a delight and the conductors a class of charming young hostesses.

ALUMNI AND FORMER STUDENTS.

Dr. J. W. E ans, '94, and Mrs. Evans announce the birth of Harold Waldo Evans, April 24, 1903.

Harriet G. Nichols, '98, will attend the May Musical Festival at Topeka, and then take up her residence in Manhattan, where many old friends will give her a hearty welcome.

Lydia Gardiner-Willard, fourth year 1884, presents a paper, "Science in the Household," before the Social Science Federation this week, at the annual meeting held in Wichita.

E. M. Cook, '00, visited College last week. He has completed his school in Marshall county, and will rest until the opening of the teachers' institute in Logan county, where he will serve as one of the instructors.

Harry W. Stone, '92, general secretary of the Y. M. C. A., Portland, Ore., visited the College last week and addressed the students. He emphasized the importance of believing, not only that the College is good of its kind, but that it is the right kind.

Stella Stewart, '00, will be employed next year in the Philadelphia school for the deaf and dumb. This is the largest school of its kind in the world, employing fifty teachers for its more than five hundred inmates. She will spend the summer vacation in Trenton, N. J.

Anna Fairchild White, '91, and her husband, Francis H. White, formerly professor of history here, have changed their residence from Brooklyn, N. Y., to 157 Valley road, Montclair, N. J., with a view to securing a more healthful location. Mrs. Charlotte P. Fairchild, her mother, is with them, and will make her home there for some time.

Dr. E. W. Allen, vice-director of the office of experiment stations, department of agriculture, Washington, D. C., visited the Experiment Station, April 24 and 25, to make the annual inspection of the Station. Doctor Allen was pleased with the growth made by the College since his last visit, three years ago, especially with our new buildings, in the use of which the Station shares. He made some valuable suggestions in respect to the work, and called special attention to the opportunity offered by the Louisiana Purchase Exposition for the experiment stations of the country to show what they are doing for agriculture.

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THE

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NDUSTRIALIST

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Editor-in-Chief, - PRES. E. R. NICHOLS
Local Editor, - PROF. J. D. WALTERS
Alumni Editor, - PROF. J. T. WILLARD

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THE LUNCH BASKET.

A COLD LUNCH, even at best, is a poor substitute for a hot repast, and requires, often, greater care and consideration than a regular meal, as the variety of staple lunch articles is somewhat limited. It is also essential to serve day after day so as not to produce weariness of palate.

As a lack of knowledge is the whetstone of appetite, the individual carrying the lunch ought never to put it up. Some way ought to be and can be managed whereby the contents of the lunch basket remains a mystery until time arrives for eating the lunch. Thoughtful attention ought also to be bestowed upon the packing of the box or basket, as the best lunch carelessly put up is little better than a poor one. The sight of neatly arranged food appeals to the eye and often excites a lagging appetite. Besides "a dainty lunch is of ethical value, for it fosters habits of neatness and refinement," and, in the child especially, engenders self-respect. Children and grown people are sensitive, and should never be given a lunch which they are ashamed to have others see.

In serving food it is always to be remembered that the appearance largely influences digestive activity. Lunch receptacles are to be secured in such variety as to satisfy all demands of both purse and taste. The essentials are, however, sufficient space for packing the food and neatness of appearance.

The useful appliances, such as spoon or fork and napkin, ought not to be overlooked, for no one wishes to return to the primitive methods of their forefathers and make unlimited use of the fingers, even for one meal a day. The complaint is often heard that a white napkin requires "too much care," as it becomes easily stained, and that "a red one is just as good." A red napkin is not "just as good," and a white napkin can easily be made stain free by the use of a little Javelle water. If the laundering of napkins is impossible, supply the lunch basket daily with white paper napkins.

For carrying extras, the screw-cap jar is the most convenient, being much like a small fruit jar, but straight, with a wide mouth. If this cannot be obtained, use a jelly glass with a tight-fitting top.

Beverages or soups can be added to the lunch by using flat bottles, securely corked. The collapsing or picnic cup is lighter and takes much less space than the ordinary cup. The frequently expressed wish "to have something hot" can be satisfied by keeping at school or carrying each day a tiny alcohol lamp, fitted with a tin cup for heating coffee, cocoa, or soup, or even vegetables, such as corn, tomatoes, and the like.

When more than one lunch is carried in the same box, wooden plates, on which is spread white paper or paper napkins, are most useful, as the lunch can then be neatly distributed.

It is rarely that a general mixture of salt, pepper, cake, bread, pickles and the like is relished as a mid-day repast. In order to avoid this difficulty, use wax or parchment paper. If nothing else is at hand, use paper in which butter is put up for market. Wrap each article in a separate parcel. Salt and pepper will not escape if folded like powders. In packing the box, it is better, as far as possible, to arrange the material in the order in which it is to be eaten, for it is generally true in the case of adults, and especially true in the case of children, that the food on top is eaten first. If that food happens to be cake or pastry, or both, the appetite is temporarily appeased. All goes well for a time, but hunger soon sets in, only to be satisfied by eating heartily on reaching home, rendering a regular meal impossible at the stated time. Irregularity of this character, even for one meal, often results in impaired digestion for a week or more, resulting in deterioration in quality and quantity of work accomplished.

A lunch is much more healthful when heavy pasteries and rich cakes are omitted and nutritious and easily digested dishes substituted. Sandwiches, the mainstay of every lunch, can be made in unlimited variety, but successfully created only when certain laws are regarded in breads, butter, and fillings.

Various breads, such as white, graham, whole-wheat, rye, rice and Boston brown bread afford a change. Sometimes different kinds are put together, and even delicate biscuits are used, as well as salted wafers. Bread should be about twenty-four hours old when used and come from medium-sized loaves, four by four by eight inches being a very good size. Cut in even quarter-inch

slices, remove the crusts and cut once lengthwise, or cut in any of the various shapes, such as squares, circles, triangles, diamonds, or other shapes, for which cutters can be obtained. The crusts and pieces of bread may be dried and converted into bread-crumbs for use in croquettes, scalloped dishes and puddings. Butter the bread after slicing and shaping, as the edges are then fairly free from butter and the fingers are not soiled in handling the sandwich. Cream the butter before spreading by using a bowl and a wooden spatula or a flat-bowled wooden spoon. Creamed butter is pliable and can be readily spread upon very tender bread. Almost anything that can be eaten with a covering can be used as a sandwich filling.

Meats should be well cooked. If sliced, slice thin and across the grain; unless the sandwich is very small, several pieces of meat will serve better than one large piece. Chopped beef can be made appetizing with a dash of Worcestershire or horseradish sauce, a few drops of onion juice, tomato catsup, chopped mushrooms, or made into beef loaf, while veal, lamb or mutton may be treated with anchovy sauce. curry powder, chopped capers, tomato catsup, or cold mint sauce. Fish, such as salmon and sardines, add to the variety, being made tasty by the addition of lemon juice or chopped pickles, with sometimes a bit of salad dressing.

Drumsticks are relished when served intact, but very small pieces of fowl may be utilized by seasoning with onion juice, celery salt, cooked salad dressing, or even mayonnaise.

In case all else fails, the ever ready egg can be pressed into service. It is good sliced, chopped or put through a sieve and seasoned with salt, pepper and mustard or salad dressing. Lettuce adds much to the egg filling. Chopped ham and eggs make a good mixture when well seasoned. Potted ham, being seasoned, is ready for use alone, or with egg or lettuce.

In the spring lighter fillings are greatly appreciated, especially when there is an addition in the shape of something crisp or tart. Chopped meat mixed with diced tomatoes, cress, olives, cabbage, celery and lettuce is relished, when treated with a salad dressing, Hollandaise or sauce tartaré.

Vegetables used alone and seasoned with a dressing are cool and refreshing for hot days. The list may include asparagus, cauliflower, turnips, green peas, string beans, tomatoes, cucum-

bers, lettuce, cress and chestnuts. Some enjoy sweet sandwiches with fillings of uncooked fruit, dried fruit chopped and cooked very tender, jelly or marmalade. Figs and dates with entire wheat bread give wholesome sandwiches, while English walnuts, almonds, hazel and pecan nuts, as well as peanuts, are used successfully. The glass jar affords the opportunity of giving a great variety to the lunch. Many enjoy cold cooked vegetables, such as tomatoes, corn, peas, string beans, beets and cauliflower. These interspersed with steamed pudding and sauce, baked apples, prunes, apricots, apple sauce, cranberry or prune jelly, canned fruits, preserves, Dutch cheese, custards, rice pudding, apple or prune tapioca and rice pudding will give a pleasing change.

Fresh fruits are of great value and should be added to the lunch whenever possible. Shelled nuts are often used when fruit is limited in quantity, or may be used with the fruit. Relishes in the line of radishes, cucumbers, tomatoes, pickles, stuffed eggs, olives or chow-chow frequently give the desired tone.

Stock soups contain very little, if any nutriment, but being charged with extractives and gelatine, they have been found to "promote the flow of the gastric juice, and to thus aid materially in the digestion of solid foods." These soups can be served with a maximum of satisfaction and a minimum of labor, for, at one time enough stock can be made to last a week. Each day a different vegetable may be added, making practically a new soup. Over an alcohol or oil lamp the soup will be heated in a short time, rendering a cold lunch next to a hot meal.

Drinks in the way of fruit juices are acceptable at any time, but especially during the spring and summer months. Sometimes the juice from canned fruit is used, but it is better to put up fruit juices in the fall. Lemon or orange juice is to be freely used when these fruits are plentiful in the market. From the beverages coffee and tea prove the most acceptable. Coffee (cold) is improved by cream and sugar, while sugar and a drop or two of lemon juice add to the flavor of tea. In order to save bulk and weight, both drinks and beverages may be carried in a concentrated form and diluted when desired. Rich and heavy cakes are not as healthful for a lunch basket as are sponge, cup, spice and chocolate cakes, the latter being far more digestible. The following are recipes for a few of the dishes mentioned:

Mustard Butter.—Butter, 3 tablespoonfuls; mustard, French, 1 tablespoonful. Cream the butter and mix the mustard in thoroughly. Spread as butter.

Date Sandwiches.—Dates; stone and chop fine. Spread between thin and lightly buttered slices of bread.

Peanut Sandwiches.—Peanuts (roasted), 1 pint. Shell and remove the skins, chop fine and salt to taste. Spread between slices of bread white or brown. This quantity will make fillings for six medium sandwiches.

Celery Sandwiches.—Filling: Chop tender celery stocks in small pieces; force a hard-cooked egg through a sieve. Mix the celery and egg. Moisten with a cooked dressing.

Curried Egg Sandwiches.—Filling: Cream the yolks of two hard-cooked eggs with one tablespoonful of cream. Season to taste with curry powder, salt and pepper. Pour boiling water over olives and allow them to stand ten minutes; cool in cold water, pit and chop fine. Mix equal parts of celery and olives with cooked dressing.

Cooked Dressing.—Eggs, 2; mustard, 1 teaspoonful; salt, 2 teaspoonfuls; cayenne, ½ saltspoonful; sugar, 2 tablespoonfuls; butter (melted), 2 tablespoonfuls; cream or milk, 1 cup; vinegar (hot), ½ cup. Separate the eggs. Beat the yolks until creamy, stir in the dry ingredients, then add the melted butter and cream or milk. The hot vinegar is added slowly, stirring constantly. Cook in a double boiler until thickened like cream. Beat the whites stiff and fold into the dressing. This will keep two weeks in a cool place.

Beef Loaf.—Round steak, 1½ pounds; salt pork, 2 slices; onion (small), 1; eggs, 1; milk or stock, ½ cup; bread-crumbs, ¾ cup; salt and pepper, to taste. Chop the steak, sauté the pork to a crisp and chop. The onion is minced fine. Mix the ingredients thoroughly and bake in a deep, oblong pan, which has been well buttered, for three quarters of an hour. When the mixture leaves the sides of the pan it is done. When cold, slice thin for sandwich filling.

Dr. Tate Butler, formerly professor of veterinary science at this College, at present the bacteriologist of the North Carolina experiment station, offers to free the cattle of his state from fever ticks at a cost of one cent per head.

NOTES ON RADIOGRAPHY.

THE nature of the Roentgen or X-ray has never been exactly determined. The practical side has offered such an alluring field, that the drift of investigation has been in that direction.

The value of the X-ray in surgical operations is so great that but few of that profession fail to utilize it in their work. There are some, however, who still claim that anything which has the power to penetrate as do the Roentgen rays, and of whose nature and effect so little is known, should be used with the greatest caution, and then only by those thoroughly acquainted with their power. That the X-rays, or perhaps, more truly speaking, rays which accompany them, have certain chemical powers sufficient at least to affect cures, in a simple, rapid and painless manner, of many of the skin diseases, has been fully demonstrated. Again, severe burns frequently result from an injudicious or prolonged exposure, and to avoid these burns a number of methods have been suggested, such as coating the exposed parts with oil or paraffin, or placing between the tube and exposed parts a piece of oiled paper, the theory being that this screen cuts off the rays which cause the burn, without lessening the penetrating power of the X-ray.

So far as is known, this method has proved a success, and is a precaution so easily taken that, where long exposures are to be made, it should not be neglected, unless a method of radiography, which is to be suggested later, is employed.

With the ordinary equipment, the penetrating power of the ray is so small that exposures of several minutes are required to make a good negative, the extended time increasing the chance of burns and being very trying upon the patient.

The following method was used in the laboratory with very good results, and intensifies the action of the rays upon the sensitive plate to such an extent that its use, in some cases, may prove of value: In experimenting, the back of the fluoroscope was removed from the holder and an ordinary photographic plate (unwrapped) was placed, film side downward, upon the platinobarium-cyanide screen, and a thin board, cut to fit the screen frame, inserted to hold the plate in position. Adjusting the tube (a Queen self-regulating) as for usual work with the mounted plate, placed film side up, thus bringing the fluorescent screen in such a position that the flourescent light might act directly upon

the film. In the case when a radiograph was made of the hand, a fair negative was taken in less than ten seconds, where two minutes were given for equal effect using the ordinary wrapped Carbutt's plate.

The principle which suggested the experiment was that the rays passing through the screen, being converted into ordinary light waves, would effect the plate as under usual circumstances

and that the time of exposure would be shortened.

We have been pleased to note, in Isenthal and Ward's (1091-1902) Practical Radiography, that the method was used by them in London about the same time, and states that of all the methods to accelerate the action of the rays upon the sensitive film, the above method is the only one that has survived and stood the test.

They also suggest that if the plate thus used be prepared by dipping for four minutes in a bath of

Water	1000 c. cm.
Alcoholic solution of erythrosine	40 c. cm.
Aqueous solution of silver nitrate	16 aps.
Ammonia	4 c. cm.

and dried in a light-tight room, that the effect is still more marked, lessening the time to one ninth that of the ordinary method.

That the effect produced was not light effect only was shown by passing the rays from the tube through several thicknesses of platino barium cyanide screen and their power to affect a Carbutt's wrapped plate seemed undiminished, so that only a small per cent of the rays given out by a tube are converted by the fluoroscope screen into rays of sufficient length to excite vision.

By interposing the fluorescent screen between the tube and the hand, which had been placed over a wrapped Carbutt's plate, negatives of such exceptional definition and contrast were made that it would almost lead one to suggest that the X-ray is in reality X-rays of different wave lengths, with different powers.

J. O. HAMILTON.

N. E. Myres, of near Adam's Peak, is building a house 30x30 in Manhattan and expects to leave the farm this fall and move to town. He has worked hard for several years and is entitled to a rest. His principal motive for moving to Manhattan is to give his children the advantage of the good schools there, particularly the Agricultural College.—Westmoreland Recorder.

THE INDUSTRIALIST.

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LOCAL NOTES.

This term will close on Commencement Day, June 18.

Professor McKeever will address the teachers and pupils of Mankato Saturday evening.

Professor Mayo went to Beverly last Wednesday to investigate a reported disease of horses.

Professor Walters has been invited to deliver an address at the Ottawa Chautauqua, on farmers' day, July 8.

Representative Brown, of Brown county, was here Saturday, May 2, visiting his son Foster, who is attending College.

Doctor Mayo has been appointed by Mayor Fielding as one of the directors of the Carnegie library of Manhattan.

Professor Willard attended the meeting of the Kansas City section of the American Chemical Society, which was held at Lawrence last Saturday, and took the opportunity to visit the university and friends.

The Electrical Engineering Department has just installed a general electrical fifteen-kilowatt alternator. This apparatus completes the equipment for which appropriations were made at the beginning of the year.

President Nichols spent a part of last week at the Hays Branch Experiment Station looking after building matters. It is expected to begin the erection of the new boarding hall during the present week.

Miss Helen Kimber, state president of the Equal Suffrage Association, spoke last Thursday night at the Congregational church, on the subject "Shall Women be Given the Ballot?" Many students turned out to hear her.

The baseball game at the Athletic Park last Saturday afternoon between the Creighton (Neb.) University team and the Agricultural College nine resulted in a victory for Manhattan, the score being 10 to 8 in favor of the latter.

The mid-term examinations were held last Saturday and the instructors are busy figuring the grades of the students. We believe that the work of the different classes has been very satisfactory, though there have been the usual number of yellow envelopes handled by the College post-office.

The Smith Center band, who accompanied the excursion from that vicinity last Friday, were a well uniformed and fine looking squad of young men. The band numbers twenty pieces and their music is certainly well above the average of such town organizations.

Regents J. S. McDowell and J. W. Berry were at the College last Friday and Saturday to confer with President Nichols about building matters and other business. Regent Berry had his two oldest children with him. His daughter will probably enter College next fall.

One of the many things that our visitors from Smith and Jewell counties admired last week were the handsome Percheron teams driven by the boys of the Farm Department. Whenever these teams appeared the crowd stood still and made complimentary remarks.

Miss Ida M. Barnes, of New York, solo singer, gave a song in chapel on Wednesday morning. She also sang at the May festival in the opera-house Friday night. Miss Barnes is a sister of Doctor Barnes, of the Department of Veterinary Science, and a very sweet singer.

Mr. C. L. Cool, of Salida, Colo., a dairy student in 1900, writes that he is having excellent success running a dairy near that place. He is selling milk at thirty-three cents per gallon and cream at forty cents per quart. During the past year he says he has cleared, above board and clothes, \$1800.

President Nichols announces that the annual address on Commencement will be given by the Rev. Thomas E. Greene, of Cedar Rapids, Iowa, pastor of Grace Episcopal church. Mr. Greene is a lecturer of wide popularity, having been frequently heard at Chautauqua assemblies in all parts of the country.

The campus has put on its spring suit. The lawns are green and velvety, the flowering bushes are in full bloom, the walks are being put in good shape, and the trees are beginning to invite the rambler to their shady canopies. The College hill, in May, is one of the finest pieces of landscape in Kansas or America.

Word comes from New York of the death of James Wells Champney, the artist and lecturer, which occurred last week, by falling down an elevator shaft from the fourth floor of the Camera Club headquarters. He was the husband of Mrs. Elizabeth Williams-Champney who taught drawing at the College here from 1870 to '76.

Miss Ella Weeks, assistant in the Department of Industrial Art, left for Salina on Tuesday to take the civil-service examination for illustrator and draftsman in the department of agriculture, Washington, D. C. She wrote to Professor Walters at the close of the three days' quiz that the ordeal was not nearly as hard as she had expected.

The Botanical Department has received eighty-three ears of Reed's Yellow Dent corn from the originator of the variety, Mr. James L. Reed. This variety is recommended by Professor Holden as being the oldest pure-bred corn and the one adapted to the greatest variety of localities. It will be used as the basis in breeding of local stock of high nitrogen by the Botanical Department here.

The May festival and concert given last Friday night at the Manhattan opera-house, by Brown's Military Band, assisted by Professor Clure, Miss Barnes, and several local musicians, was a complete success. The opera-house was crowded to the last seat and enough money was realized to pay the existing deficit resulting from the building of the handsome band stand on main street, near the First Methodist church.

Professor Roberts is trying to breed up a perennial vetch that will have some of the good qualities of the well-known biennial Hairy Vetch. To this end some twenty varieties were obtained from Germany from vetches of all kinds, of which only two have wintered through. Considerable quantities of seeds of two perennial vetches have been obtained, also from Germany, this spring. Crosses will be attempted between these and Hairy Vetch.

Among the many teachers from Smith and Jewell counties who accompanied the excursion last week we had the pleasure of meeting Superintendent Chilcott, of Jewell. Superintendent Poppin, of Smith, Prof. Hugh Durham, superintendent elect of Jewell, and Edwin Brookens, superintendent elect of Smith, principals Gerardy, of Smith Center, Earl, of Kensington, Simmons, of Mankato, Wyant, of Jewell, Eaton, of Burr Oak, and Dilman, of Webber.

Friday and Saturday were busy days for some people in Manhattan. The excursion to the Agricultural College by the schools of Jewell and Smith counties was favored by the finest picnic weather imaginable, and as a result the westerners came to the tune of a dozen or more car-loads-stout farmer boys, redcheeked farmer girls, bright-looking schoolmarms and handsome big brothers and sisters. We were told that 769 excursion tickets were sold by the managers. The College threw its doors wide open for them and they made the best of it. They walked from building to building, inspected the laboratories and shops, discussed the cattle and admired the greenhouses like people who wish to find out and learn. On Friday evening Brown's band and orchestra, assisted by Professor Clure, Miss Barnes and many others, gave a May festival and concert for their entertainment in the Manhattan opera-house. On Saturday morning the College cadets gave a dress parade on the campus and the girls of the calisthenics classes a special drill in the Girls' Gymnasium. chapel was filled to the last seat and several hundred students and visitors stood up in the rear and along the walls. o'clock a majority of the excursionists left on the Union Pacific for Fort Riley, to inspect Uncle Sam's establishment there, and

in the evening the whole procession left again for their farm homes in Smith and Jewell. We hope and believe that many of the young people will return to the College as students next winter and in this manner the excursion will produce the lasting good which its managers, the county superintendents of the two represented counties, expected to bring about.

The April meeting of the Manhattan Horticultural Society was held on the 23d ult. at Horticultural Hall. Assistant Leslie Paull read an interesting paper on "Fungus Diseases Affecting Fruits," which spoke of a number of diseases to which trees and plants are subject. This paper will be published in the INDUSTRIALIST. A spraying demonstration was conducted by Assistant Geo. O. Greene, who exhibited a collection of spraying apparatus consisting of many sorts and sizes, from the hand instrument to the electro-gasoline power pump. This might be called a demonstration of the evolution of the spray pump. On motion, the hour of meeting was changed to 3:00 p.m. This change was made in the interest of those connected with the College, who wish to attend the meetings of the society. The society adjourned to meet Thursday, May 28, at Horticultural Hall.

The following press dispatch from Wichita tells of the latest movements of ex-president T. E. Will, of this College, and of several ex-members of the Faculty: "A socialist college will open its doors for students in Wichita, Wednesday, May 6. The name of the college is to be the American Socialist College. It is organized to teach socialist doctrine, spread socialist literature throughout the country, and it is the intention of the promoters to make Wichita the principal distributing point for the spread of socialist teachings throughout America. For a short time the socialists maintained a college at Trenton, Mo., but the support given was poor. It is claimed that there were very few of the faith in and around that city. The college was closed last Friday, and next week it is expected that Prof. and Mrs. Frederick A. Metcalf will reach this city as the advance guard of the corps of instructors in the college. Professor and Mrs. Metcalf will have charge of the Western College of Oratory, a branch of this school. The Rev. and Mrs. O. P. Harnish will have charge of the department of music and will arrive shortly after. Thomas E. Will, formerly president of the Kansas State Agricultural College, the dean of Ruskin college, the socialist institution at Trenton, will reach this city near the close of the month and will be dean of the school and professor of sociology. W. A. Ross, principal of Ruskin Business College, will come with him and have charge of the business departments. Mr. Ross is also treasurer of the Mr. and Mrs. G. W. Davis, of Trenton, and Mr. A. M. Smith, assistant instructor in the commercial and shorthand departments, will be here before the school opens. The college was brought to Wichita through the work of Granville Lowther, formerly pastor of the Methodist Episcopal church at McPherson, who a year ago was ejected from the church as a heretic after a trial before the Southwest Kansas conference at Arkansas City.'

ALUMNI AND FORMER STUDENTS.

Maude Knickerbocker, '93, is mourning the loss of her mother, who died April 24, after a prolonged illness.

H. W. Johnston, '99, telegraph operator for the C. R. I. & P. Ry. at Wichita, visited the College recently.

Hope Brady, '98. is back to her home in Manhattan, having completed her year's teaching in the schools of Liberal, Kan.

We learn through the *Herald* that Mary Pritner-Lockwood, '99, of Meadville, Pa., is visiting her parents, near Keats, where Professor Lockwood will join her in June.

Lydia Gardiner-Willard, fourth-year student in 1884, was elected treasurer of the Kansas Social Science Federation, at its meeting in Wichita last week. At the same meeting she presented a paper on "Science in the Household."

Dr. Arnold Emch [M. S. '00, and professor of graphics, 1898-9], heretofore assistant professor of pure and applied mathematics in the University of Colorado, has been promoted to a full professorship of graphics and mathematics.—Science.

Edith Stingley Haggman is the little daughter that arrived, April 24, in the home of Mr. and Mrs. E. T. Haggman, Los Angeles, Cal. Mr. Haggman was formerly a student here and Mrs. Haggman graduated in 1896 as Sadie Stingley.

F. E. Johnson, '99, is spending the summer vacation in the practical study of veterinary medicine and surgery with Dr. C. B. McClennan, Lawrence, Kan. He returns to Kansas City next fall to continue his studies at the veterinary college.

Dr. Roscoe T. Nichols, '99, was married Sunday, May 3, 1903, to Miss Osa Clark, of Liberal, Kan. They are keeping house in their own home, in Liberal, where the doctor has built up an excellent medical practice. The congratulations and good wishes of many friends are with the young couple as with buoyant hope and fullness of joy they cross the threshhold of a new life as they enter their new home.

H. M. Cottrell, '84, professor of agriculture here, 1897 to 1902, has taken the position of manager of the seed department of the Brookmont Farms, at Odebolt, Iowa. These farms contain over seven thousand acres devoted especially to the production of pure-bred field seeds and pop-corn. This season there will be four thousand acres planted to corn, five hundred twenty-five to pop-corn, and fifteen hundred to small grains. Professor Cottrell evidently has an opportunity to do good work, and on a large scale, and with his enthusiasm and experience he will doubtless achieve success. The farms in respect to soil and drainage are among the best in the state, and the proprietor, Mr. A. E. Cook, has ample capital for their operation. Next winter he expects to establish a chemical laboratory and employ a chemist the year round.

PASTURE FOR HOGS.

Press Bulletin No. 122, from Animal Husbandry Department, Experiment Station, Kansas State Agricultural College.

The Kansas Experiment Station has realized \$11.90 per acre from rape pasture and \$24.10 from alfalfa pasture in ninety-eight days. These results were obtained from the following experiments, which were begun July 25 and concluded October 31, 1902:

Thirty shoats, averaging 52 pounds in weight, were divided as nearly equally as possible into three lots of ten each. Lot I was fed on a grain mixture of shorts one-half, corn-meal one-fourth, and Kafir-corn meal one-fourth, in a dry lot. The other two lots were fed the same grain ration, but one received rape pasture and the other alfalfa pasture in addition. Each lot was given what grain the hogs would eat up clean, and each had access to water and ashes. The weights of grain consumed and gains made are as follows:

	Grain consumed, in pounds.	Total gain, in pounds.	Grain consumed per 100 lbs. gain, in pounds.
I. No pasture II. Rape pasture III. Alfalfa pasture	3214	1023 1076 1078	371 301 300

The gains of the three lots are very nearly equal. The dry lot consumed 557 pounds, or 70 pounds for every 100 pounds of gain, more grain than the pasture lots. The lot on rape required one acre of pasture while the alfalfa lot used a trifle less than one-half acre.

The lot without pasture required 3.71 pounds of grain, to produce one pound of gain. Assigning the same value to the grain fed the hogs on rape pasture, we have 877 pounds of pork credited to the grain and 199 pounds credited to the rape. At six cents per pound, the price at which hogs were selling at the close of the experiment, this would be a credit of \$11.90 per acre for the rape. In a similar manner the alfalfa is credited with 201 pounds of pork, equal to \$12.05, and as there was only a half-acre of alfalfa this makes a rate of \$24.10 per acre.

The cost of preparing the seed-bed and seeding the rape was \$1.80 per acre. It was seeded in the feed lots on soil that would otherwise have remained idle, or would have grown up to weeds.

The shoats on pasture enjoyed their diet and seemed satisfied. Those in the dry lots seemed to be hankering after something green, and their appetites seemed unsatisfied without some kind of roughness. They would even nibble at straw in a vain attempt to satisfy their craving.

The experiment emphasizes the superior value of alfalfa pasture. Where alfalfa is not available, or where variety is wanted or it is desired to utilize otherwise waste land, Dwarf Essex rape, seeded at the rate of six to eight pounds per acre any time from early spring to late summer, will furnish an excellent diet that is greatly relished by the hog. Succulence and variety will make healthier hogs that will return increased profits. D. H. OTIS.

Mr. E. E. Greenough, second year, has accepted a position on a Jersey dairy farm near Missoula, Mont. He began work the first of May and expects to return to College in the fall.

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For catalogue or other information, address

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THE INDUSTRIALIST.

VOL. 29.

MANHATTAN, KAN., MAY 19, 1903.

No. 30

CERTAIN PHASES OF PLANT SYMBIOSIS OF ECONOMIC INTEREST.*

NE word here it may be necessary to define. "Symbiosis" means, literally translated, "living together." As applied to the vegetable kingdom, it has both a broad and a confined application. In its former sense it refers to any close inter-relations between plant and plant, or plant and animal. The mistletoe growing upon the oak, the fungus upon its host, the codling-moth larva within the apple, are common examples. In its narrower sense it indicates that mutual benefit is derived. The fungus which lives upon the roots of the beech furnishes the tree with moisture and dissolved food-salts from the soil; the tree in turn secures some raw material from the atmosphere and 'combines all into nourishment, which it shares with the fungus; the flower, as party of the first part, offers its stores of nectar and pollen to the bee, the butterfly or the moth, as party of the second part, in consideration of which said party of the second part does agree to transfer a portion of said pollen to a third party, i. e., to the pistil of a flower of the same species. But as the benefit derived in the relations between the ordinary species of fungi and the higher plants are wholly in favor of the former, it will be seen that symbiosis must here be used in its broader sense.

What, then, is a fungous plant-disease? It is that form of symbiosis between the fungus and its host in which the fungus lives at the expense and to the detriment of the host plant. To simplify it, it is plant rivalry in which "the battle is not to the strong." Thus we ought to remember that, while we regard these fungi as enemies both of the plants and of ourselves, it is only a phase in the lower world of that same competition which is the fundamental principle of our commercial enterprise, and indeed of life itself.

Our present store of knowledge of the habits and especially of the treatment of fungous diseases of economic plants in this country, is due more to the energy with which our experiment sta-

^{*}Read before the Manhattan Horticultural Society, at its meeting, April 23, 1903.

tions began and kept up the attack upon the problem since their establishment, in 1887, than to any other source, although the inception of the movement proceeded from the division of botany, of the United States department of agriculture, a few years earlier.

In Part III. of the annual report of the Connecticut agricultural experiment station for the year 1900, Dr. W. C. Sturgis published his fourth revision of the literature of plant diseases, or, to give his title: "A Provisional Bibliography of the More Important Works Published by the United States Department of Agriculture and the Agricultural Experiment Stations of the United States, from 1887 to 1900, Inclusive, on Fungous and Bacterial Diseases of Economic Plants."

The host-plants are arranged alphabetically, and under them the diseases alphabetically by their common English names and the Latin name or names following. I have summarized this list, and this summary, with your forbearance, I will read in full:

TABLE I.

Diseases.	Diseases.	Diseases.
Alfalfa. 3 Apple 17 Almond 3 Apricot 1 Arbor Vitæ 1 Artichoke 1 Asparagus 3 China Aster 1 Barberry 5 Bean 6 Beet 12 Blackberry 6 Buckwheat 1 Butternut 1 Cabbage, Cauliflower, etc 6 Carnation 8 Carrot 1 Catalpa 2 Cedar 3 Celery 5 Cherry 10 Chestnut 2 Chrysanthemum 4 Clematis 2 Clover 3 Corn 6 Cosmos 1 Cotton 9 Cranberry 2 Cucumber 10 Currant 6	Filbert 1 Fir 3 Flax 1 Fish Geranium 2 Gooseberry 6 Grape 20 Hazel 1 Hemlock 2 Hollyhock 5 Horse-chestnut 1 Horse-chestnut 1 Horse-chestnut 1 Hydrangea 1 Larch 2 Lemon 4 Lettuce 7 Lily 3 Linden 2 Lupine 1 Maple 2 Melon 9 Mignonette 1 Mulberry 3 Nasturtium 1 Oats 5 Okra 1 Olive 6 Onion 5 Orange 6 Orchid 3 Parsnip 1 Pea 5	Diseases. Pepper 2 Persimmon 3 Pine 4 Pink 2 Plum 10 Poplar 2 Potato 15 Primrose 4 Priwet 1 Quince 7 Radish 3 Raspberry 7 Rice 2 Rose 7 Rye 4 Salsify 2 Snap-dragon 2 Sorghum 2 Spinach 6 Spruce 4 Squash 5 Strawberry 6 Sugar-cane 8 Sweet potato 10 Sycamore 1 Tobacco 10 Tomato 11 Turnip (inc. rape) 7 Verbena 1 Violet (inc. pansy) 10 Walnut 2 Watermelon 6 10 10 10 10 10 10 10
Cypress	Peach 14 Pear 8 Peony 1	Wheat $\dots 12$ 102 sorts. $\frac{12}{469}$
	J	

With	20	diseases	1	sort.		With	7	diseases	5	sorts.
66	17	66	1	66		66	6	66	11	66
66	15	66	1	66		66	5	66	7	66
66	14	. 66	1	66		66	4	66	6	66
66	12	66	2	sorts.		66	3	66	13	66
66	11	66		sort.			2	66	18	66
66	10	"	6	sorts.		"	1	"	23	66
66	9	"	2	66					102	sorts.
66	8	66	4	66					102	501 05.

These may be roughly classified again as follows:

	Sorts.	Diseases.
Pomological	25	156
Floricultural	20	61
Vegetable	26	150
Forest Trees and Ornamentals Miscellaneous Field Crops (Grain,	17	35
Forage, Sugar and Tobacco)	12	57
Fibre Plants	2	10
	102	469

In connection with this list, however, the following considerations should be noted: (1) Often the same specific disease attacks different horticultural sorts, and hence are duplicated in this list. For example black-knot occurs on cherry, and plum; fire blight on pear, quince and apple; club-root on cabbage, cauliflower, radish, turnip, rape, etc. This fact, of course, would tend to reduce this list numerically. (2) Many of the sorts listed represent two or more species; e. g., bean includes Phaseolus vulgaris, Phaseolus lunatus and several other species; our cultivated varieties of plum have been derived from about ten species; pine, as listed above, may mean any species, native or introduced. While including all these species would not effect the disease list numerically, it would tend to lessen the disproportion between the two lists. (3) No diseases that are due to merely physiological disorders are here included, and yet some of these are very common and important. Such is the "mosaic disease" of tobacco; brownspot or fruit-spot of apple; and "cedema" of tomato. (4) The number of fungous diseases here listed represents in scarcely a single case anywhere near the number of fungous species which have at times been found preying upon it. Two or three examples from the head of the list will suffice to illustrate. Farlow and Seymour's "Provisional Host index of the Fungi of the United States," already almost ten years old when the Sturgis list appeared, gives alfalfa five as compared with Sturgis three, yet two of the last mentioned have been discovered since the former list appeared.

Apple......F. & S. 106, Sturgis 17
Almond.....F. & S. 3, Sturgis 3*
Apricot.....F. & S. 3, Sturgis 1
Arbor Vitæ...F. & S. 22, Sturgis 1, etc

*Entirely different species.

To summarize these points, while duplication, etc., makes an increase in the Sturgis list, that the number of fungous diseases is entirely within bounds is shown by comparison with a more comprehensive species list, even though that list represents only those known up to June, 1891, nearly a decade earlier. The reason for the great disproportion between the two lists is that the Sturgis list only represents those which have become so inimical to horticultural interests as to demand the attention of experiment station workers for their amelioration.

For many years, up to 1895, the American Pomological Society had endeavored to keep in publication a list of approved varieties of those horticultural sorts which come under the head of pomology. At that time it was deemed advisable to cooperate with the division of pomology, of the department of agriculture, and the result was the "Catalogue of Fruits Recommended for Cultivation in the Various Sections of the United States by the American Pomological Society," published as bulletin No. 6 of the division of pomology, Washington, 1897. This, revised, appeared in 1889 as bulletin No. 8 of the same division, and doubtless one or the other is familiar to you. Division I. of this catalogue is devoted to "Fruits Mainly Adapted to Northern Localities." This is composed of fifteen sections in the following list (see Table II.), but in it I have split section 15, nuts, into its five subsections. Under each section and subsection are given the "recommended varieties." It may be superfluous before this society to try to explain what this catalogue comprises, but I think my purpose will best be served by a few quotations from these pamphlets:

"The present compilation being a revised catalogue of fruits, comprising such varieties as have been found best adapted to the various fruit districts of the country."—G. B. Brackett in "Letter of Transmittal" of bulletin No. 6.

"Many sources of information have been sought and repeated efforts have been made to secure accurate and conservative opinions on the merits of varieties and their adaptability to the several districts."—W. H. Ragan, in the introduction to bulletin No. 8, the revised catalogue.

We ought, then, to find in this list those varieties of these fruits whose qualities have been well tested, and other things being equal, the older and best-known, and widest-cultivated varieties. That the length of time since its origin and the breadth of its distribution were considerable factors in the approval of any variety, is shown by the following, from the introduction to bulletin No. 6, by Professor Lyon:

"Much of it (the information) proves unsuited for use in the revision, as in many cases it includes numerous new or local varieties which, although more or less of them may ultimately prove widely valuable, are yet too little known to warrant their

insertion in a general catalogue."

An examination of the list does not disappoint these expectations. Practically all the old "stand-bys" are there, and, although I had no means of verifying it, I am firmly convinced that away up toward or beyond 90 per cent of the acreage of each of these horticultural sorts is, and has been during the last fifteen years, of these varieties. If you will allow me this assumption, as I think you reasonably can, it will be quite evident that mainly upon these varieties have been worked out the multifarious problems of the treatment of their diseases in the last fifteen or twenty years, and not upon the thousands of "novelties" and "varieties of a year" and not upon the rare and select varieties, be they old or new, in the hands of the breeder or fancier.

Upon this basis I have made a comparison of the number of approved varieties listed in the American Pomological Society catalogue in Division I. with the number of diseases to which each horticultural sort is subject. In the following table the nineteen sorts are arranged first in order of the number of their varieties from the greatest to the least together with the percentage of the whole number of varieties. Secondly, they are arranged similarly in the order of the number of their diseases (according to Sturgis), with the percentage of the total diseases.

In Sturgis' list, four hundred sixty-nine diseases are considered with relation to one hundred two horticultural sorts. Our nineteen sorts here listed represent 18.63 per cent, or about one-fifth of these, and the one hundred twenty-nine diseases to which these are subject represent 27.5 per cent of the diseases mentioned, or something over one-fourth. Moreover, I think it will readily be seen that this group is the only one of sufficient size

and compactness to be handled statistically. For example, the varieties of the group commonly termed "vegetables" are in such a chaotic state as to render it practically impossible even to guess at the number of true varieties in any case. We have no such criterion for these as we have for the fruit sorts. Aside from this, probably the fruits as a group have a greater economic value, and have therefore received more attention even to their slighter ailments.

8110	er anmenus.					
			TABLE	III.		
		Varieties.	Per- centage.	rivo, darentia.	Dis- eases.	Per- centage.
1. 2. 3. 4. A.	Apple	132 121 106	30.46 12.6 11.56 10.12 . 64.74	Grape Apple Peach Plum Diseases	20 17 14 10	15.5 13.2 10.85 7.75
5. 6. 7. 8. 9. 10. 11. B.	Pear	79 56 48 41 38 25 19	7.55 5.35 4.58 3.92 3.62 2.39 1.81 93.97	Cherry Pear Quince Raspberry Strawberry Currant Blackberry Diseases	10 8 7 7 6 6 6	7.75 6.2 5.43* 5.43 4.65 4.65 4.65
12. 13. 14. 15. 16. 17. 18.	Apricot Gooseberry Walnut Pecan Almond Quince Mulberry Filbert	15 14 14 8 7 6 4	1.43 1.34 1.34 .76 .67 .57 .38 .29	Gooseberry Mulberry Almond Walnut Chestnut Apricot Filbert Pecan	6 3 3 2 2 1 1	4.65 2.31 2.31 1.55 1.55† .78 .78
	The first of the last of the l	1047		Characterist Character	129	

19 = 18.63 per cent of all the sorts in Table I. 129 = 27.5 per cent of all the diseases in Table I.

In this table some rather striking facts are revealed. If we draw a line through below the first four in each column, we find on each side a compact group containing approximately 65 per cent of the whole number of varieties subject to 47 per cent of the total fungus diseases attacking the fruit group. Two-thirds of all the varieties in this list are of apple, plum, peach and grape, and nearly one-half of all the diseases that attack fruit sorts attack these four. Yet, we scarcely need the figures here; we have but to consider that this "big four" is the most sprayed of them all, and I hardly think I would overstate it were I to add, more sprayed than all the rest put together.

If we next draw a line under eleven of both columns, in order

A. Summary of first four. B. Summary of first eleven.

^{*}Omitted in the succeeding summary. +Included in the preceding summary.

to take in the most of our small fruits, we find that the sum total of our varieties now amounts to about ninety-four per cent and their diseases to eighty-two per cent. In this second group we have two "interlopers," as I really have no right to call them, but the compactness which was observable in the first group is here broken by the presence of the chestnut on the one hand with a relatively high varietal number and a low disease coefficient; and on the other hand by the quince with a high susceptibility to disease but slight variability. In summarizing the percentages in this group I have omitted the quince, but included the chestnut.

Manifestly my list is far from perfect. It could hardly be otherwise, since, because of the multiplicity of factors with which we have to deal, the biological realm does not lend itself readily to hard, cut-and-dried mathematics. For example, I have not taken into consideration the pedigrees of these varieties. When one speaks of "plum" one may mean the descendent of any one of ten species, yet these are not equivalent in their susceptibility to disease: the Japanese plums, for example, being but slightly susceptible to black-knot and leaf-blight, two of the banes of growing the Domestic type.

However, remembering with what an intricate problem we are here dealing, and how unsatisfactory a priori conclusions are apt to be, I am still forced to believe that we have here grounds for a provisional statement, viz., that, other things being equal, plants in cultivation are susceptible to fungous diseases in direct proportion to their variability.

A few considerations lend themselves to this concept. One is the well-established fact of "correlation," of which every grower of plants ought to be fully aware. It is that development of the plant in any particular direction is at the sacrifice of development in some other particular. It is but the conservation of energy brought into the organic world. Through many years, especially with long domesticated sorts, we have gone on demanding more and better fruit, or larger and showier flowers. If the plant's correlation then to this demand be that it is less able to meet the attacks of its insiduous foes, what are we to think? And whom should we blame? The plant, in its native state, has adjusted itself pretty exactly to its environment. We bring it under cultivation, that is, we provide for it a new set of surroundings to which it and its offspring must now undertake to fit themselves.

We get an idea of something larger, or sweeter, or brighter, and we pick out a descendent in the third or fourth or further generation which conforms somewhat to our preconceived idea, and it becomes to us a variety. We introduce it. Another grower with another or slightly different idea builds upon our variety and gets a conformation to his type. That becomes another variety, and so on. Meanwhile the energy which is being directed in one channel is lost in one or several others. It all takes time, but one of the channels in which energy is lost is in its power to fight against the little rivals over which in its native state, perhaps, its victory was nearly supreme.

Prof. L. H. Bailey, in "The Evolution of our Native Fruits," speaking of the relation of the downy mildew, black rot, etc., of the grape as causing the failure in the attempted introduction of European varieties, says, "The singular thing about all these troubles is that they are native Americans. From time unknown they have preyed upon the native grapes; but they are not serious upon these natives because all the most amenable types of grapes had long since perished in the struggle for existence, and the types which now persist are necessarily those which are, in their very make-up or constitution, almost immune from injury, or are least liable to attack. The mildew, for example, finds little to encourage it in the tough and woolly leaf of the fox grape. But an unnaturalized and unsophisticated foreigner, being unused to the enemy and undefended, falls a ready victim; or if the enemy is transported to a foreign country, the same thing occurs."

Let us glance at Table II. once more. Notice that for the most part, the last seven in the disease list are growing, even in cultivation, under more natural conditions than are most of the others. We change the environment less for these, we call for less correlation, and in these are found only about 10 per cent of these fruit diseases. There is very much more in this matter of the nativity and pedigree of plants, had we but opportunity to develop it. For example, the English gooseberries, descendants of Ribes grossularia, are practically superior in many ways to the American varieties from Ribes oxyacanthoides. The fruit is larger and the plant stockier in the former group, but they are practically a failure here because of their susceptibility to the mildew, from which our smaller fruited varieties are almost free. Again, with-

in a year or two past, a new disease has appeared among the plums, but thus far only among the Japanese plums. It is as yet unnamed and undescribed. For several months we have been trying to get hold of enough good, living fungous material upon which to work, and we are still awaiting developments. But one thing has been quite noticeable—of all the infected material which has been sent in, all that we could satisfactorily identify, has been of some hybrid variety containing a strain of Prunus simonii. If this continues to hold true, we have here an example of what effect heredity plays in the matter of disease. It perhaps ought to be remarked that the "Japanese plums" arise from the two species, Prunus triflora and Prunus simonii.

It is not in my province this afternoon to deal with spraying as a means of the prevention of fungous diseases, but spraying is only a necessary evil. There are some other things worth thinking about. They should be thought of long before there is anything to spray, that is, when you plan your orchard, your garden, your vineyard, your greenhouse. They ought to be part and parcel of the same calculations which deal with the probable profit and the liability of loss. That is, with all the other judgment which you are called upon to use, should be the ability to discern the liability of your chosen plants to disease.

Two factors enter into this question. One I have already touched upon, that is, the inherent tendency of the descendant varieties of certain species to be or not to be susceptible to injurious diseases. One should be as particular in regard to the pedigree and history of the strain of plants in which he is going to invest his money as he would be about the strain of cattle, horses, or of Plymouth Rock chickens. Dr. George T. Powell, of New York, in a recent address before the Massachusetts State Board of Agriculture, stated how he solved a problem of this sort. It is of such interest and so pertinent to the point in question that I desire to quote it quite fully. He says:

"The King I will mention as an apple of high quality, and yet I should not recommend any one to plant it, because it is a tree that is constitutionally weak, will not live beyond twelve or fifteen years, and is especially affected by canker and other diseases, and yet there is no apple that sells in the English market, except the Newtown Pippin, that brings so high a value as the Tompkins County King. . . . The great demand for it has put me in the

channel of working, studying, and thinking along the line of tree breeding, and how I should arrive at the method. . . . I made this discovery, that when I pruned trees such as Greenings and Baldwins, it was comparatively easy work, but when it came to the Spy it was entirely different. I found that I could get tired in two hours, and if I pruned Northern Spies all day, I was considerably tired. What is the difference? The wood of the Northern Spy tree is tough, of fine grain, and hard, and when you saw the wood, it is like sawing through steel. Realizing this difference in the wood, while sawing upon the hard wood of the Spy, the thought came to me, what would be the effect of transferring King buds or scions to the Spy stock; and the longer I sawed, the harder I thought on the subject, and I resolved to plant a King orchard in this way. From the nursery I selected one hundred trees of Northern Spies. The thought arose, if there is to be any value in this change of method of propagation, I must look to the character of the trees from which I take King scions; and I could not take one from the trees on my own farm, for every tree was weakened by disease, and I felt certain if I took the scions from my own trees I would simply be transmitting the weaknesses I already had. I sent to Tompkins county, where the King thrives at its best, and had scions selected from the best trees, free from disease, trees that gave the best quality of fruit, and that bore annually instead of once in two or three years. I received scions from trees of this character, and transferred them to my Northern Spy stock." Doctor Powell then exhibited fruit produced from these trees, to show that thus far the results had been quite up to his expectations. We have probably seen the dawn of a new era in this respect. Among breeders, there is quite a strong movement in the direction of producing disease-resistent varieties of one sort or another.

Besides this factor of heredity is a second, hardly less important, and that is the effect that the environment of your particular locality is likely to have on the susceptibility of the plants to disease. In this matter every grower must be his own judge and critic; his farm the experiment station, for none other can tell him. It involves his observation of the combined climatic, soil, moisture, temperature, slope and many other conditions with reference to that particular plant he desires to grow.

In 1896, there was first noticed, almost simultaneously, in

Massachusetts | Connecticut, New York, New Jersey and Delaware, the rust of asparagus. In six years this disastrous disease has spread step by step westward, northward, and southward. Last year it existed in central and eastern Canada, in the whole United States, to and including the Dakotas, Nebraska, Colorado It attacks and completely destroys the entire plants above ground, usually about the first of July. I have seen nine acres destroyed in seven days. The effect is striking. appears as if devastated by fire. The plant is thus deprived of two months of food assimilation, and the loss to the shoots of the following year has run as high as 80 per cent, with 25 per cent as the average. Satisfactory and economic methods of spraying it have not been devised, but Doctor Halstead, of New Jersey, has found that certain varieties are little susceptible. Moreover, Dr. G. E. Stone, of Massachusetts, has collected data regarding this disease and made some very interesting generalizations from From soil studies made in many portions of that state, he has found that there is a direct relation between the destructive (summer) stage of the rust and the water retaining capacity of the soil. In dry seasons and in sandy soils the disease is most This is probably connected with the loss of vigor in disastrous. the plants through insufficient water supply. He has found beds only a few miles distant in heavier clayey soil, with a relatively high water-retaining capacity, which have shown little or no rust. More recently he has noted that the plants growing in shade were less affected, and has suggested the possibility of growing the crop under cheese-cloth, as tobacco is grown in Connecticut. mention this as an instance to show you the importance of plant surroundings as well as their ancestry in this connection.

Yet another element to consider is constant and thorough cultivation to keep the vitality of the plant at its highest. And in conclusion let me say that the underlying principle in all these cases is plant vigor. Proper selection, proper surroundings, proper cultivation, and as a last resort, spraying, are the elements of success in this contention against these foes of the plants and ours.

Leslie F. Paulle.

Professor Otis, of the Animal Husbandry Department, has just completed a bulletin on "Flesh and Fat in Beef." It will be sent to the State printer in a few days.

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

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LOCAL NOTES.

Professor Otis attended a farmers' institute at Baldwin, May 9.

A number of College people went Topeka on Tuesday to hear the Nordica concert.

The new farrowing pens of the Animal Husbandry Department are giving excellent satisfaction.

Doctor Mayo was called to Wichita, Beverly, Smith Center and Topeka last week on State veterinary work.

Postgraduate E. W. House left for Topeka yesterday to accept a position in the pattern department of the Santa Fe shops.

Doctor Weida was called to Topeka Thursday to be with his son, Frederick, who was receiving treatment at Christ's Hospital.

The mule colt "Captain," which weighed one hundred twenty-five pounds at birth, on April 30, gained seventy pounds in eleven days.

Assistant W. E. Mathewson, of the Chemical Department, was called home to Topeka Friday morning by illness of his grand-mother.

The pure-bred Percheron mare "Pansy" dropped us a very fine mare colt last Thursday night, weighing one hundred twenty-two pounds.

Swift & Co., packers in Kansas City, have sent the College a few large samples of blood meal, which they want tested for their effect upon stock.

The carpenter-shop is building a large and handsome walnut case for the engineering department and two stall bars for the Girls' Gymnasium.

Dr. S. Sisson, formerly professor in the Veterinary Department of this College, has been advanced from associate professor to a full professorship in the Veterinary Department of Ohio University, made vacant by the resignation of Dr. Paul Fischer.

Prof. D. E. Lantz is getting letters from many parts of the State, inquiring about the extermination of jack-rabbits. It seems that the impression prevails in some counties that the Agricultural College is making war on that pest, as well as the prairie-dog and pocket-gopher.

The new stalls for the addition to the herd of thoroughbred horses recently bought are completed. They are located on the south side of the east wing of the old barn.

Doctor George, of Pittsburg, Pa., formerly president of different educational institutions in that state, visited College last Friday morning and spoke to the students from the chapel platform.

The Riley county normal institute will begin June 29 in the Manhattan central school building, and lasts four weeks, conducted by Prof. J. E. Edgerton. Teachers' examination at the close of institute.

President Nichols went to Topeka on Monday of last week to consult with the attorney-general regarding the College appropriations, and with the State printer, concerning the printing of the annual catalogue.

Professor McCormick took the members of his advanced classes in mechanical engineering to Topeka to visit the Santa Fe shops and other places of mechanical interests, on Monday of last week. All report a very profitable trip.

The students from Marshall county have formed a permanent club and have elected A. H. Sanderson, president; Miss Elizabeth Finlayson, vice-president, and M. Farrar, secretary. The club has twenty-one members. An evening picnic was held at Professor Walters' residence on Monday.

The May examination in the professional branches for State certificates will be held at the College as follows: Wednesday, May 20: 8 A. M. to 10:30 A. M., history of education; 10:30 A. M. to 12 M., school law; 1:30 P. M. to 3:30 P. M., school management; 3:30 P. M. to 6 P. M., methods of instruction. Thursday, May 21: 8 A. M. to 11 A. M., philosophy of education.

The Faculty met on Thursday afternoon to consider the low-grade and failure cases of the mid-term examination. A number of changes in assignments were made, several failures were referred to the president for further investigation, and one or two very negligent students were asked to withdraw from College. On the whole, the results of the examination were very satisfactory.

The Webster-Ionian play, given in the Manhattan opera-house last Saturday night, was one of the most successful entertainments ever produced by our College societies. The house was packed to the last seat and the audience frequently went enthusiastic over the perfect character representation of the players. The piece entitled "Leah, the Forsaken" is not an easy one, but the selection of the characters was such that the production seemed natural in every respect. Professor Brown's orchestra furnished good music during the intervals.

The new members of the Students' Herald staff, elected Thursday, May 14, to conduct the paper for next year are: Editor-inchief, A. N. H. Beeman; business manager, F. C. Romig; associate business manager, Roy A. Seaton; literary editor, Frank L. Bates; associate literary editor, Jessie M. Sweet; local editor, N. L. Towne; associate local editor, Julia V. Wendel; exchange editor, Harvey Adams; subscription manager, T. W. Buell; reporter, Jens Nygard; alumni reporter, Helen Knostman.

The prairie-dog poison laboratory is still sending out quantities of poison every day, though the spring work has occupied the farmers of the West for over a month. A short time ago the county commissioners of Ford county bought two hundred cans of poison to be distributed by the township officers in all parts of their county, and Representative C. Beeson, who owns about seven thousand acres of land inhabited by the hungry rodents, reports "every one killed." Professor Lantz will go to Cheyenne county this week to make further investigations in his line, among the sandhills of that section.

ALUMNI AND FORMER STUDENTS.

Grace M. Clark, '92, writes that her father died of heart failure, May 8, at his residence near Berea, Ky. Miss Clark is employed at Berea College, as clerk and typewriter.

O. H. Elling, '01, has been appointed foreman at the Fort Hays Branch Experiment Station, and entered upon his duties last week. He will doubtless perform them with ability and industry.

Miss Minnie Copeland, class of '98, is having good success at private nursing in Chicago. She resigned her position at Freeport, which is filled by Miss Emma Doll, of same class. Miss Copeland was delighted to find in her beautiful home in the Armour flats, Mrs. Adelaide Wilder-Sawdon, of the class of '98.—

Mercury.

In a letter to the editor, one of the prominent alumni expresses the hope that the recent suggestion in this column be carried out so as to give graduates and former students an opportunity to contribute to some kind of a memorial to President Fairchild in connection with the new chapel. He believes it ought not to be difficult to raise one thousand dollars for this purpose, perhaps much more, and names a suitable sum to be set down for himself in that event.

R. W. Clothier, '97, writes from Cape Girardeau, Mo., to ask for soil containing soy-bean tubercles, as he wishes to have some of his students try some inoculation experiments. He says that the prospects for the Southeast Missouri State Normal are excellent. This spring they received an appropriation of \$200,000.00 for erecting a main building. During the winter Professor Clothier was offered a position on the Missouri State Board of Agriculture, but decided to remain where he is for the present.

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THE INDUSTRIALIST.

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No. 31

TWO KINDS OF SPECIAL STUDENTS.

Henry van Dyke, of Princeton University, in Success.

THE problem of the special student is the perplexity of American colleges. So difficult is it, so complicated with other questions, that a teacher who has any prudence in his disposition may well shrink from taking part in the public discussion of the problem in its present stage. But the unfortunate publication, under my name, of an article which was not mine and which did not represent my views, forces me to choose between prudence and candor. Believing that, after all, frankness is the better part of discretion, I have accepted the invitation of the editor of Success to say a few plain words, as practical as possible, about the problem of the special student.

The important fact to be noted is that our colleges have to deal with two kinds of special students. They may be classified, using a terminology which is familiar in medicine, as benignant and malignant. Special students of the latter type represent a growth which is positively hostile and dangerous to the health, and to the very life, of the college. Special students of the former type represent a growth which may be in some respects abnormal, but which, at the same time, is the expression of certain real needs, and the result of certain actual and inevitable conditions, and is therefore to be regarded as benign, in a far more literal sense than that which physicians technically attach to the word.

Let us suppose that a youth comes to college and demands a special course. The first question to be put to him is, "Why? The regular course is the normal thing. It has every presumption in favor of its being the best thing. It has been wrought out by the practical experience of teachers and scholars through hundreds of years. It has been expanded and liberalized to embrace within its general scheme a great many different provisions for various temperaments and needs. It stands for what wise men have found to be desirable, if not actually necessary, in a full, well-rounded education. You do not come to college merely to fit

yourself for making money, nor even to get a training for some particular profession. You come to lay the foundation for a professional training, or for a broad, intelligent business life. You come to get into touch with the best thought of other men and other ages. You come to learn something about the relations of the various kinds of knowledge; what physics has to do with philosophy, what chemistry has to do with biology, what modern civilization owes to Greece and Rome and Judea, what experiments have already been tried in economics and sociology and with what results, what literature means as an interpreter and a guide of life. You come to discipline your mind, so that you will be better able to study anything that you may need, more finely fitted to understand any problem that you may meet, when you get into your own special line of work in the world. Is four years too much for this studium generale? Are you qualified to make out a better plan of liberal intellectual discipline than that which is embraced in the normal course? Just why do you ask for a place outside of the regular lines of academic training as a special student?" Now the answer to this question will probably show in which class of special students the youth belongs.

Suppose it becomes clear that the real reason why he does not take his place in the regular course is simply because, in spite of fair opportunities, he has neglected the preparation necessary to get into it and go on with it. Then the chances are ten to one that, since he has been too lazy to get ready for college, he will be too lazy to do good work in college. He may possibly absorb some little benefit from his residence in what is vaguely called "an academic atmosphere," but he is far more likely to infect that atmosphere with the microbes of indolence and folly. would be much better for him, and for the college, that he should turn back and "dig" hard for a year until he can meet the conditions of a regular entrance. A habit of vigorous mental work is one of the best things that a boy can bring to college. No man can be educated unless he learns, first of all, that education means effort steadily directed to a distant end. There may be "reading without tears," but not without toil.

But suppose that the special student avers that he has not been lazy; he has only been independent. The reason why he has not studied certain things that are required is because he does not like them. The reason why he wishes to take a special course is

because he intends to pursue only the studies which attract him, or which he thinks he can "use in his business." In this case, the probability is that he is the very man who needs the regular course in order to give him some notion of the difference between eccentricity and originality. The studies which he does not like may be the very ones that would do him the most good. The object of education is not merely to develop a man's natural gifts, but also to remedy his defects. A college course is not necessary for everybody. Some first rate men have succeeded in life without it. But, to paraphrase a saying of Lincoln's, if a man needs that kind of thing, that is just the kind of thing that he needs.

The degree of Bachelor of Arts has stood, hitherto, for a certain method of discipline, a certain measure of scholarship. To change its significance is to depreciate its value. A man who wants it ought to be willing to pay the intellectual price for it. Part of this price is submission to guidance in the choice of studies, as well as in the pursuit of them. The special student, whose self-directed course is a virtual criticism of the whole idea of collegiate education, is certainly a hostile, confusing, disintegrating factor in college life.

To both of these men of whom we have been speaking,—the lazy man and the capricious man,—it seems to me that we should give counsel somewhat as follows: "Do not confirm your faults by taking a special course. Try to correct them by working your way into the regular course."

Nothing better has been said on this subject than an observation of Doctor Marden, in the October number of Success: "Remember that success may be purchased too dearly."

But there is another type of man who comes to the college and asks to be admitted as a special student. He is usually an older man, and one who has known something of life's hardships. Poverty, or sickness, or the pressure of some inevitable duty has hindered him from going through a normal course of preparation for college. He has not money enough or time enough to go back and begin over again. Yet he appreciates the value of a liberal education, and wants to get as much of it as he can, not merely to help him in his work as journalist, teacher, lawyer, engineer, writer, or what not, but also, and more especially, to broaden his life as a man. It is not the degree that he cares for, but the culture.

Such a man, if he comes to the college with at least enough prep-

aration to enable him to sympathize with its aims and ideals, is likely to be a special student of the benignant kind. He will probably work hard, follow guidance, and give, as well as receive, inspiration. Sometimes he will come out, at the end of two or three years of diligent study, with a stronger mind, and a better basis for further work, than some of the well-prepared fellows who have dawdled through the whole curriculum.

Colleges ought to make room for such special students, and give them a chance to get what they need, so far as this can be done without deranging and confusing their normal plan of education.

But what course of study is to be recommended to a special student of this exceptional and welcome type?

That is a question which cannot be answered for the class, but only for the individual. It cannot properly be answered through correspondence, but only through personal investigation. Everything depends on the quality of the man, the precise stage of growth which he has reached, and the end which he has in view in seeking a broader education. An engineer does not always need more mathematics. A lawyer does not always need more jurisprudence. A writer does not always need more literature. Special students are special cases.

The best thing for a man to do, when he wants to get as much as possible of the benefit of a college education, and yet finds himself actually unable to take the regular four year's course, is this:

Go to a first rate teacher, preferably to one who knows you personally. Talk with him frankly about the whole case. Take his advice about the studies that will be most likely to liberate, clarify, and strengthen your mind. Then go to any college where you can get these studies, under living teachers, in a democratic atmosphere, and with healthful physical surroundings.

SUGGESTION IN DISEASE.

IT IS now pretty generally believed that mind processes register their effects upon the body. By means of delicately constructed instruments, it is possible to measure many of these effects. Much attention is also being given to the various aspects of mental pathology and therapeutics by some of the leading physicians. Quite a number of the latter are resorting to suggestion as a form of treatment for certain nervous and functional diseases, and with some show of success, too.

In order to make a somewhat careful study of the influence of suggestion as received from the printed page, and from lectures, I sent printed inquiries to the deans of fifty of the leading medical colleges in the United States. Twenty-four replies were received. The questions, together with a summary of the answers, are given below.

I. What per cent of your medical students (estimated) feel decided symptoms of the diseases studied early in the course?

Not all of those replying to the general inquiry made direct answer to this question; but those who did, estimated variously from two to one hundred per cent, the average being thirty-three per cent. One very thoughtful physician answered as follows: "Practically none, for the reasons that (1) Medical students are of more than average intelligence. (2) They do not study diseases during the first year, and when they do they have acquired some measure of a feeling of superiority to most forms of disease. (3) They believe that to a doctor, disease in himself is a stigma—a reflection on his knowledge."

II. Is this effect most noticeable in the case of any special disease?

Nearly all of those replying to this question gave diseases of the heart, kidneys and nervous system as being most common. One mentioned appendicitis.

III. Do these cases yield readily to treatment?

Some of the characteristic replies: "Yes, by suggestion," "Moral support cures," "Usually relieved, as soon as competent authority decides," "Hypnotic suggestion relieves them."

IV. It is held by some that patent medicine advertisements are vicious, tending to induce the diseases they are designed to cure. What is your opinion of this matter?

This question brought out the most interesting replies of all. Some of them follow: "People get the diseases by studying the advertisements." "They frighten people into the notion that they have all sorts of diseases." "They cause much damage to health and happiness." "Descriptions of disease are always harmful to those who do not understand normal conditions."

One member of a medical college faculty, who is now a well-known surgeon in the United States army, wrote: "The patent medicine advertisement is written by an expert, who studies the weakness of humanity and skillfully plays upon it. The credu-

lous or unreasoning victim reads over the symptoms, finding that he really has some of them, and imagining he has others. Persuaded by a long list of testimonials, he buys and takes one, two, or a dozen bottles. Sooner or later he loses faith in the nostrum, but by that time an even more convincing advertisement appears and another cure is tried. I am personally acquainted with people who have taken nearly every patent preparation that is for sale."

The dean of a southern medical college said: "A theological graduate consulted me concerning a supposed kidney disease. He got the idea that he was afflicted by reading the — Medical Advisor. He was a perfectly well man. This is but one of the innumerable cases that every physician meets with." Another says: "A man came into my office recently all doubled up with pain. Pointing to an illustrated advertisement in a paper which he carried, he showed me 'an exact description of his disease." It was very hard for me to convince him that there was nothing the matter with him, but such was the case."

The dupes of the patent medicine advertisement of to-day are innumerable. I have investigated this matter for some years, having interviewed scores of people on the subject. Many druggists have told me that it is the advertising alone that sells the preparation. Quality has little or nothing to do with the case. A harmless mixture of grape juice and molasses will find a ready market if properly advertised. Millions are spent every year in getting this business before the public. Before me lies a full page of a daily paper containing the pictures and testimonials of forty-two "prominent society women who have been cured." The pictures of many governors, congressmen, and other high officials, adorn another page. Another likeness shows the victim writhing in all the agonies of the disease. It seems so real that one can almost hear him groan. I believe that people are hypnotized by these pictures and descriptions. The typical advertisement reads about as follows: Are you cross and irritable and conscious of pains in the back and loins at night? Do you have that tired feeling and a bad taste in your mouth in the morning? so, your system is all run down and you are threatened with appendigripus. A bottle or two of Uneeda-ba la-hay will cure you. But there is danger in delay!

I believe that all descriptions of disease in ordinary periodicals

are detrimental to the public health and the public welfare and that as such they should be prohibited by law. Until such prohibition can be brought about all who in any way have charge of the education of the young should forewarn them against any possible deception of this nature.

W. A. MCKEEVER.

FARMERS' INSTITUTES AGAIN.

N article in number 28 of the Industrialist, prepared by the writer of this, makes the statement that "The first wellorganized and widely advertised farmers' institute under the auspices of the Faculty of the Kansas State Agricultural College was held in January, 1864." This article has evidently been read with interest by some of the old patrons of the College, for we have received several communications concerning it. In a letter by Rev. Elbridge Gale, who is now living in Mangonia, Fla., on an orange farm, the ex-professor asserts that this College was not only one of the very first to organize farmers' institutes but actually the originator of the idea. It will be remembered that Mr. Gale was a Regent of this College from 1865 to 1871, and the professor of horticulture and related branches from 1870 to 1878. Before 1865 he was connected with the organizing of Bluemont College, which afterward became the progenitor of the Agricultural College. He was also one of the founders of the State Horticultural Society, and for many years its president.

Professor Gale writes as follows:

MANGONIA, FLA., May 11, 1903.

PROF. J. D. WALTERS: I have been much interested in your report of the Kansas farmers' institutes in the last INDUSTRIALIST. I am very much pleased that they are proving so much of a success. I write to add one little point to your very interesting article. You could have claimed for the Kansas State Agricultural College the honor of originating the farmers' institutes. If you will go back to the old records of the Board of Regents as kept by Doctor Denison you will find a resolution, or a record of such resolution, providing for the holding of a farmers' institute, under the direction of the Faculty, at the College. Almost immediately a second institute was held at Wabaunsee, which was attended by several of the Faculty and by other interested parties.

After some desultory talk, both in and out of the Board meeting, at my personal request (as I was acting as chairman of that meeting) Doctor Reynolds introduced the resolution that really created the farmers' institute. Almost immediately the report of our action was published in the eastern press, about in this wise: "Kansas is holding farmers' institutes. Why not?" If there is an honor in the creation of a good thing, Kansas

should have it.

I am glad to know that you are holding on to your work, and that we can hear from you now and then. With many pleasant recollections of the past, I remain,

Yours truly,

ELBRIDGE GALE.

It is a difficult matter to say positively that Professor Gale is right in claiming priority for this institution, but it is certain that many claims presented for this honor by eastern colleges are evidently far behind in point of time. From an article by Professor Otis, published in number 18 of this volume of the INDUSTRIALIST, the following excerpts concerning the claims of Michigan are grouped together:

"Hon. A. C. Glidden, in an article on farmers' institutes, published in the report of the Michigan board of agriculture for 1892, says that Hon. W. J. Baxter, of Michigan, introduced the following resolution to the executive committee of the Michigan State Agricultural Society, in 1867: 'Resolved, that we again recommend to the authorities of the college, a course of lectures on agricultural and kindred subjects, during the winter months, satisfied as we are that they will be largely attended by a class of farmers' sons who are partially released from the labors of the farm at that season of the year.' In the same article Mr. Glidden says that Dr. Manley Miles, of the Michigan Agricultural College, and Mr. W. C. Flagg, one of the trustees of the Illinois University, were instrumental in calling a meeting in Chicago, August, 1871, for the purpose of getting those persons interested in agricultural advancement together for 'organizing, consulting and coöperating in the great work of agricultural knowledge and education.' The programs rendered at this and succeeding meetings were similar to those presented to our present-day farmers' insti-From these meetings the interest in institute work seemed to spread. Pres. T. C. Abbot and Dr. R. C. Kedzie, of the Michigan Agricultural College, were ardent advocates of the farmers' institute plan, with the special thought in view of bringing the agricultural college and the farmers of the state in closer touch with each other. At first some opposition was incurred from the board of regents, but as soon as started, the farmers' institute idea met with a hearty response from the farmers.

"Prof. L. H. Bailey, in bulletin No. 79 of the office of experiment stations, United States department of agriculture, says that probably the first legal authority for the instruction of farmers not students of the agricultural college is found in a Michigan law

passed in 1861, containing the following clause: 'The state board of agriculture may institute winter courses of lectures for others than students of the institution, under necessary rules and regulations.' The institute work in Iowa and Vermont began about the year 1871."

The writer of this has not had the opportuity to look up the records referred to by Professor Gale, but he knows from many sources that the statements made are facts. Farmers' institutes were being held by the Faculty in a number of towns in the settled part of the State between the years 1864 and 1868, and the work found much favor among the representative farmers. On June 23, 1868, the Hon. G. W. Glick, of Atchison, later elected governor of Kansas, was requested to meet with the Board of Regents to discuss ways and means of extending this work. He appeared and offered the following resolution, which was unanimously adopted: "Resolved, That a system of lecturing on agricultural subjects at this College and in the several populous settlements be continued, so that the benefits of farming according to correct agricultural principles may be disseminated throughout the J. D. WALTERS. State."

AIMS AND TENDENCIES IN MATHEMATICAL INSTRUCTION.

IN AN enumeration of the beneficial results supposed to flow from the study of mathematical branches we may include development of the reasoning powers, discipline in logical habits of thought, training in accuracy, thoroughness, and persistence. These points, as well as others, have secured general recognition among educators from the time when arithmetic constituted one of the three r's of the common-school course of study to the present day. Such qualities are at once acknowledged to be of fundamental importance in any scheme of mental development. The lawyer in welding together his arguments into a flawless chain of reasoning, the thinker who carries conviction by the accuracy of his conclusions, are manifesting what may be termed the mathematical spirit of intense loyalty to truth. No other science is so certain of the eternal and inviolable correctness of its truths as pure mathematics, and one trained in its province ought to have a high regard for the verities of life wherever found.

Aside from these rather obvious general aims and purposes, which are in harmony with the main object of a college education,

namely, the development of power, certain ideas of a more special character are suggested by the subject in hand. On page 62 of the College catalogue appears the statement that one of the aims of the department of mathematics is "to develop in the student the ability to attack new problems rather than to burden the mind with a large number of facts and special methods." In harmory with this idea the mere power of memorization is given a very inferior place in mathematical instruction. The learning of many long formulas is relatively unimportant after their deduction is understood. The student should learn to distinguish between the salient points of a discussion and the mere details, and if the subject in hand is lengthy and complicated, should acquire the habit of summarizing the steps of the process for the purpose of subsequent presentation. A lesson usually has some central thought which should stand forth in its proper relation to statements of lesser importance.

Problems that have merely great length as their distinguishing feature have little to be commended for consideration. We may recall in this connection certain miscellaneous examples in the arithmetics our fathers studied, involving few ideas and many numbers in their solution. Of course, a test in patience and accuracy has its value, but the acquirement of ideas is of far greater importance. As far as mathematical text-books are concerned, the new is certainly better than the old.

Naturally, the chief disciplinary aim in mathematical instruction is directed toward the ability to think. If the college graduate has not gained the power of sustained and accurate thinking, if he has merely acquired a certain amount of information, his education has been a partial failure.

Without underrating in the least the value of the study of pure mathematics as a mental discipline, reference should be made to the desirable tendency at present in our institutions of learning to give emphasis to chapters that have an intimate bearing upon subsequent practical application. The field of applied mathematics is large and constantly growing. Frequent demands are made upon it by many of the natural sciences, the various departments of engineering, etc. The extensive use of the graphic method of representation, exhibiting at a glance a large amount of statistical imformation along any line of investigation, is based upon a fundamental idea of coördinate geometry.

It is not that the pure and theoretical side is to be cultivated less, but that the applied side is to be developed more. The thought is not to lose anything in the way of culture and at the same time to be of more direct service in other fields.

B. L. Remick.

ALL HAIL! K. S. A. C.

On Saturday afternoon, May 2, a mixed octette composed of Misses Alice Perry, Sarah Hougham, Alice Ross and Estella Fearon, and Messrs. A. N. H. Beeman, W. O. Gray, Howard Mathews and Vernon Matthews, and accompanied by the band, sang the following song, which was composed by Prof. W. O. Clure. Professor Brown directed the music.

TUNE-Austrian National Hymn.

Far above the rippling waters
Of the Kansas and the Blue,
Reared amid the stately grandeur
Of the towering hills so true,
Stands our noble Alma Mater
In her majesty supreme;
Proudly do we sing the praises
Of our good and gracious queen.

Rouse ye, loyal sons and daughters;
Swell the song throughout the world.
Cheer the royal purple banner—
Regal emblem ay unfurled.
Shout the name of Alma Mater—
Hail! All hail to thee!

Bright jewel of the Sunflower State—
Hail to thee! K. S. A. C.

We are marching with our banner
Flung afar upon the breeze;
Steady plodding brings us nearer
To the goal we aim to seize.
Always shouting, jay-rah, jee-haw,
Jay-hawk-saw, Hurrah! Hurrah!
Three times three and with a tiger,
K. S. A. C. Kaw! Kaw! Kaw!

In life's battles as on we go,
Struggling upward to attain;
We will all proclaim thy virtues—
Spread abroad thy matchless fame.
May thy precepts ever lead us
On to glorious victory!

| And bright memories shall bind us
Fondly to K. S. A. C. |

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PROF. J. T.	WILLARD	. Alumni Editor

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LOCAL NOTES.

The State examination for teachers' certificates, held at this College last week, was taken by six candidates.

President Nichols was in Topeka on Wednesday and Thursday attending a meeting of the State Board of Education.

Doctor Mayo met with the State Live Stock Commission, at Topeka, last Wednesday, to devise ways and means for preventing the spread of Texas fever among stock.

Professor Otis has divided the feeds and feeding classes into sections. Each section is to produce a model farmers' institute program upon some subject along the line of study.

Mr. Tupper, of Salina, formerly connected for eight years with the Hiawatha Academy, led the morning chapel exercises last Tuesday and visited many classes and laboratories during the forenoon.

Prof. A. Ludlum, of Topeka, for many years superintendent of schools at McPherson and Salina, occupied a seat on the rostrum last Wednesday morning and feasted his eyes on the multitude of students present.

W. J. Griffing, director of the Kansas State Historical Society, informs us that the society is making arrangements for a trip along the Kansas and Republican rivers during the coming month to look for specimens.

This spring the Experiment Station planted twelve varieties of spring wheat, oats, and barley, also several varieties of flax, field peas, and vetches. Twenty-five varieties of cow-peas and soybeans will be planted soon.

When passing through Leavenworth last week, Doctor Mayo visited the Fort and met several former College students, among them Lieutenants Cavenaugh and Grimes. Both are doing well. Cavenaugh stands fifth on the list for promotion to a full captaincy and Grimes stands sixth.

Rev. Elbridge Gale, formerly professor of horticulture and related branches at this College, 1870-1878, writes to Professor Walters from Magonia, Fla., that he is still deeply interested in the welfare of the Kansas State Agricultural College and its Industrial. We intend to publish his very interesting letter in some future issue.

The contract for the construction of the Boarding Hall at Fort Hays Branch Experiment Station was let last week to Joe Clark, of Hays, for the sum of \$2017. The contractor will have the use of a quantity of stone and lumber from the old Fort buildings, free of cost. The building is to be completed by July 15, 1903.

Manhattan will soon have the luxury of artificial ice. Everything is in readiness at the plant to manufacture ice, as soon as a clear stream of water can be obtained from the well. It was intended to make ice last week, but it will probably be by the middle of this week before Manhattan will have a chance to use the article.

The Alpha Beta and Webster societies are preparing for a literary session, to be made up of funeral orations in honor of the old clock that used to point the time on the walls of their society room. Some time ago the clock "stopped, never to go again," and the embryo orators are going to cremate it with touching exercises and heartrending eulogies.

Last Friday night Professor and Mrs. Willard gave a party to the Faculty and assistant professors in honor of Professor and Mrs. Goodell. Professor Goodell has accepted the chair of history and economics at Denison University, Ohio. Notwithstanding threatening weather, the reception was well attended and all report a good time. Professor and Mrs. Willard are charming entertainers.

Professor Cole, of Chicago, the president of the Music Teachers' National Association, has appointed Professor A. B. Brown, of the K. S. A. C., a delegate from this State to the national convention of that association in Ashford, N. C., on June 30, July 1, 2, and 3. This meeting will be the twenty-fifth annual convention and will be held at Ashford at the invitation of the Southern Music Teachers' Association, which is a branch of the National.

ALUMNI AND FORMER STUDENTS.

Dr. Schuyler Nichols, '98, stopped to visit his sister and friends last week, returning to his home in Liberal, Friday.

H. F. Butterfield, '01, having completed a year's work teaching manual training in the Pittsburg, Kan., schools, is visiting at home.

The following alumnae took the State teachers' examination at the College last week: Harriet G. Nichols, '98, Hope Brady, '98, Grace Bolton, '00, and Emma M. Cain, '02.

H. M. Cottrell, '84, in charge of the seed department of Cook's farm at Odebolt, Ia., recently assisted in showing this large farm to forty-six distinguished agriculturists from Germany, who are making a tour of this country for the purpose of studying its agricultural methods.

W. H. Edelblute, '92, writes to Professor Walters, from Rathdrum, Idaho, that he is the county surveyor of a county that has an area of 5564 square miles, and the proprietor of one of the best equipped fruit farms in the northern part of his state. He is also the father of a bouncing boy, born January 24, 1903.

On Thursday evening, May 21, 1903, a company of friends and relatives gathered at the Spohr home, on Colorado street, the occasion being the wedding of Miss Amelia Spohr and Milton M. Davis. As the strains of "Oh, Promise Me," beautifully sung by Miss Huntress, died away, the bride and groom took their places and Dr. John Hood performed the simple ceremony which made them man and wife. After the many congratulations and good wishes had been spoken, a dainty supper was served in three courses by the bride's sisters. Miss Spohr was a popular third-year student in 1900, and Mr. Davis is the register of deeds for this county. The good wishes of many friends speed the couple on their happy way.

The May number of Forestry and Irrigation states that R. S. Kellogg, '96, will this month begin the study of the tree growth of Kansas north of the Arkansas river and west of a line drawn from Osborne through Russell to Larned. This work will be continued until fall. He will study the tendency along water courses to increase a supply, especially when protected from fire and stock, and will determine what species are best adapted to plant on those uplands that contain no natural growth. The same journal states that W. L. Hall, '98, has just returned from a trip to New Mexico, where he has been making plans for planting four hundred fifty acres near Roswell, in the Pecos river valley, for the South Spring Ranch and Cattle Company. Most of the trees will be hardy catalpa, but for shade and ornament black walnut, pecan, ash, basswood, and others, will be planted. The trees will receive irrigation.

At the Swedish Lutheran church last night occurred the marriage of Miss Hilda Olson, '97, to Mr. Alvin E. Axelton. Rev. C. A. Scheleen, of St. Mary's, performed the ceremony. The church was prettily decorated and the ceremony beautiful and impressive. A reception was held afterward at the home of the bride's parents, Mr. and Mrs. Peter Olson, and an elaborate wedding supper was served. Reverend Scheleen made a short address to the happy bride and groom, who received congratulations from their many friends and relatives present. The bride was born in Manhattan, and is a young woman of many graces and has a host of friends. Mr. Axelton is the son of Mr. and Mrs. A. G. Axelton, who live two and a half miles northeast of Randolph. He comes of a prosperous and highly respected family and gives promise of an honored and useful life. The young couple will live on the Axelton place, in Pottawatomic county, to which they will go with the best wishes of all who know them.—Nationalist.

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MANHATTAN, KAN., JUNE 9, 1903.

No. 32

THE FLOOD AT MANHATTAN.

Our friends abroad have undoubtedly read in the daily press that Manhattan, as well as every other town in eastern Kansas, has had its share of the flood that devastated the fertile valleys of the Kaw and its tributaries. Aside from a few hundred broken glasses in the roof of the greenhouses and the west sides of the College buildings, due to the hail-storm of Tuesday afternoon, this institution has no damages to report, but the city of Manhattan, being located on the comparatively low bottom directly adjacent to the rivers, has suffered quite severely. Every business house in the lower part of the city from the Blue river bridge to the First M. E. church was submerged from a few inches to five or more feet. Much merchandise was ruined, cellars were filled, dwellings were made uninhabitable for weeks, and some of the buildings were permanently damaged.

The rivers started their abnormal rise on Wednesday, May 27. On Thursday evening the Blue was twenty-three feet above lowwater mark, and people began to feel uneasy. On Friday morning the real situation dawned upon the city and many began to arrange for moving out of their homes or business houses. In the evening of that day the water had reached Third street, and was still rising. The lower bottoms about town were submerged, forming a large lake from one to eight miles wide. The Kansas river bridge had been pushed from its piers, telegraph and telephone service had become stopped, and the electric-light plant was under water and unable to furnish light. Several passenger-trains stood in the water at the two depots and the passengers left for higher ground. The worst was now feared, because the rains continued and the water began to rise at an alarming rate.

At one o'clock on Saturday morning the Kaw had reached about twenty-seven and one-half feet above low water, a level of nearly six feet above any previous record for forty years. It was now feared that the flood might break into the city from the south-west, and a general alarm was sounded to rouse the citizens and inform them of the impending danger. The result was a general exodus for the College and the dwellings in the highest parts of the city. It is estimated that over a thousand people sought safety in the College buildings during the night. Main college hall and the domestic science building looked like hospitals on the morning of Saturday. Every office and room was full of women, children, dogs, cats, clothing and hastily picked up valuables. A drizzling rain fell all day, the wind blew cold from the north, and though the waters began to fall slowly the situation was disheartening.

It was now a question of how to provide food and shelter for all. Groceries were hard to secure and the swift current at crossings had cut large holes in the streets and sidewalks and the ground had sunk along culverts and sewers. However, by Saturday evening all had somehow been provided for and the sick had been received into the homes of the more fortunate. Thanks to the heroic work of a number of domestic science girls, who worked all day Saturday in the kitchen laboratories of the domestic science hall preparing hot coffee and lunches, none of the refugees at the College were left hungry.

On Sunday the water-bound trains were moved west over the tracks of the Rock Island railroad and many of the people went to their homes to begin the work of cleaning up. The water, however, subsided very slowly. On Monday it had cleared Third street, but Second street was still submerged. Reports came in during the day, from surrounding districts, of much damage to farms, houses and improvements. Every wagon bridge over the Blue or Kansas in Riley county, except the bridge at Manhattan over the Blue, is down and it will require many weeks to rebuild them. Much stock has been drowned in all parts of the county and there are business men and farmers who have lost from \$500 to \$5000 on account of the raging waters. The wonder is that so few lives were lost. There were many rumors afloat during the week, but it seems that there was not a single casualty in Manhattan city and township.

On account of the distress occasioned by the floods the Mayor has appointed a relief committee to receive and distribute aid to the needy. Cash subscriptions can be left at either bank; clothing and provisions at Commercial Club hall. An urgent appeal is made to the public for liberal donations. The relief committee is composed of the following citizens: Geo. T. Fielding, mayor; Rev. J. K. Miller, chairman; Prof. W. A. McKeever, secretary; Geo. S. Murphy, president of First National Bank, treasurer; E. R. Nichols, President of K. S. A. C.; J. Q. A. Shelden, secretary of Commercial Club; P. C. Hostrup, member of the city council; Gen. S. M. Fox, and Capt. A. S. Rowan.

ADDRESS TO THE ALUMNI.

THE executive committee of the Alumni Association has arranged for an informal reunion and reception to be held at the College Gymnasium, Wednesday evening, June 17. It is hoped that all resident and all visiting alumni will be present. Light refreshments will be served and a musical program will be rendered.

The College authorities have designated the Wednesday before Commencement as Alumni Day, and the meetings, business and social, will hereafter be regular features of Commencement week.

The weekly visits of the Industrialist, which, by the courtesy of President Nichols, is now sent to each alumnus, has doubtless helped to revive memories of College days and given the members of the association a better idea of the growth and present work of the College.

Let us hope that every alumnus who can will attend, and those who cannot will at least send a card to tell of their whereabouts and welfare.

Below will be found the constitution adopted at the triennial reunion of the association, June 19, 1902:

ARTICLE I.- NAME.

SECTION 1. This organization shall be known as the Alumni Association of the Kansas State Agricultural College.

ARTICLE II.—OBJECT.

SECTION 1. The object of this association shall be the promotion of the interests of the College, and of acquaintance among its graduates.

ARTICLE III. - MEMBERSHIP.

SECTION 1. This association shall consist of members, wives of husbands and husbands of wives who are graduates, who shall be known as associate members, and honorary members.

SEC. 2. Upon recommendation of the officers of the association, at any annual meeting, former officers of the College may be elected honorary members. They shall be exempt from dues and assessments; they may not vote or hold office, make or second motions, but shall possess all the other rights and privileges of members.

ARTICLE IV.—OFFICERS.

Section 1. At each annual meeting a nominating committee shall be appointed, whose duty it shall be to prepare a list of officers for the ensuing year, subject to the approval of the association.

- SEC. 2. The officers of this association shall be a president, vice-president, secretary, treasurer, and no person shall hold more than one of these offices at the same time.
- SEC. 3. Officers shall be elected for a term of one year, beginning the first day of the next July after election. They shall hold office until their successors have been elected.
- SEC. 4. The duties of the officers of this association shall be such as usually devolve upon similar officers of corporations, except as otherwise provided in this constitution and by-laws.

ARTICLE V.—MEETINGS AND REUNIONS.

- SECTION 1. An annual meeting shall be held at the College during each Commencement week, notice of which shall be sent to all graduates of the institution.
- SEC. 2. A reunion of the association and its invited guests shall be held each year the date of which is divisible by three. The arrangements for this reunion shall be in charge of the officers of the association.
- SEC. 3. Assessments to meet the expenses of the reunion shall be made upon members and associate members in attendance.
- SEC. 4. For the banquet of the Triennial Reunion, all participants except honorary members of the association shall be charged an uniform fee.
- SEC. 5. The officers of the association shall provide for an address to be delivered before the association by one of its members on the occasion of each banquet.

ARTICLE VI.—AMENDMENTS.

SECTION 1. This constitution may be amended or revoked by a three fourths vote of all members present at any annual meeting, provided at least two months' notice shall have been given through the INDUSTRIALIST.

SEC. 2. The by-laws may be temporarily suspended at any annual meeting by a two-thirds vote of the members present.

ARTICLE VII.—RULES OF ORDER.

SECTION 1. Robert's Rules of Order shall be authority on all points of parliamentary order.

H. C. Rushmore, President of Alumni

A TEST OF HAND SEPARATORS.

Press Bulletin No. 123, issued by the Dairy Department.)

Statement as to Conditions: Operating Test.—The figures given under this table are the average of from five to seven tests of each machine. The separator in each test was operated ten minutes under conditions prescribed by the book of instructions, with milk at 90 degrees F., not over thirty-five minutes after milking time. The work was done under the direct supervision of the Dairy Department, Kansas Experiment Station.

Table I.—Operating Test of Hand Separators.

NAME OF SEPARATOR.	No.	Capacity per hour, lbs.	Test of skim-milk.	Test of cream.	Lbs. lost in bowl washing.	Total per cent loss.
De Laval Sharpless Tubular Empire Iowa Dairy. National United States	1 4 2 0 6 6	472 518 442 457 496 429	.048 .042 .038 .054 .051	37.8 31.7 33.8 37.1 44.8 36.1	.011 .014 .057 .038 .013	.064 .069 .126 .110 .095 .058

Explanation of Table I.— The capacity per hour is calculated on the basis of a ten-minute run, as are all the other data in Table I. Samples of skim-milk and cream were taken from the total amount of each when ten-minute run was completed and tested in Babcock tester by usual methods given for such testing. The pounds of butter fat found in bowl wash is the total amount of fat in bowl and contents of bowl after turning off the milk and flushing the bowl with from three to six quarts of skim-milk. The total per cent loss is found by computing the pounds lost in skim-milk, adding this to the pounds lost in bowl wash, and the whole calculated in per cent of loss in skim-milk. It should be noted here that the loss in bowl wash would not differ much in varying lengths of run. There would be about the same loss in a twenty-minute run as in a ten-minute run. This being a fact, a twenty-minute run would show a less percentage of total loss than the ten-minute run. A ten-minute run is probably a little below the average for all users of hand separators.

Table II .- Power Test made by Department of Electrical Engineering.

NAME OF SEPARATOR.	No	Turns of dle per	Revolutions of bowl permin	Weight of bowl, lbs ozs	Length, of crank, in	H. P. no l	Lbs. pull cerank, 1 load	H. P. full load	Lts. full load
De LavalSharpless Tubular	1 4 2	min. 45 45 55 60	7065 16515 9969 10680	$ \begin{array}{c} \overline{\cancel{2}} \xrightarrow{\text{F}} \\ \vdots \\ 12-10\frac{1}{4} \\ 6-7\frac{3}{4} \\ 8-12 \\ 7-14\frac{1}{2} \end{array} $	of 10½ 13 9½ 9¼	.08 .06 .09	11.3 6.5 11.2 15.2	.10 .10 .11 .15	14.3 11.2 13.7 17.1
Iowa Dairy	6	60	10200 10200	$\begin{array}{c c} 9-8\frac{\varepsilon}{4} \\ 11-6\frac{1}{2} \end{array}$	$9\frac{1}{2}$ $10\frac{3}{4}$.12	13.1 17.8	.13	14.8

Explanation Table II.— The last two columns of this table are of direct interest to the operator of a separator—the horse-power required to operate the machine when it is doing work, and the amount of exertion that must be applied to the handle to keep the machine at its work. This exertion is measured in the number of pounds the operator is required to push on the handle. In comparing results of the different machines there must be taken into account the number of turns of the handle and the length of the crank. Other things being equal, the faster the handle is turned the more horse-power will be used up in turning; but here must also be considered the weight of the bowl and the smoothness with which the gearing works. In all cases, the longer the crank the less pull will be required to turn the crank. The turns of handle per minute, revolutions of bowl per minute, weight of bowl and length of crank are from exact measurement and need no further explanation.

Summary of Points.—Points in which machines excel, as given in above tables, are as follows: Capacity per hour, Sharpless; test of skim-milk, United States; minimum loss in bowl wash, DeLaval; minimum total loss, United States; minimum horse-power to operate, DeLaval and Sharpless same; minimum pull on crank, Sharpless.

Conclusion.—Do not, from the above, draw too hasty conclusions. These tests were made under best conditions and with new machines. There are two points the intending purchaser should carefully consider, namely, the ability of the machine to do good work under trying conditions, and the durability of the machines. Neither of these are covered in this bulletin, and we have no data coverering such conditions at present writing.

ED. H. WEBSTER.

LATE CROPS.

(Press Bulletin No. 124, from Agriculture Department.)

The crops on much of the river bottom-land have been totally destroyed by the extensive floods, and farmers are undecided as to what to plant in order to gain some income and secure fodder and grain for their stock next winter. The information and general suggestions given below may assist some in taking advantage of the opportunity for producing crops which still remains.

Dates of First Killing Frosts.—The dates of the first killing frosts for the last twenty-three years, as they have been recorded at this Station, are given below:

Year. Date. 1880, October 4. 1881, September 17. 1882, October 13. 1883, October 14. 1884, October 9. 1885, October 4. Average, October	Year. Date. 1886, October 1. 1887, October 10. 1888, September 28. 1889, September 27. 1890, September 13. 1891, September 29.	Year. Date. 1892, October 8. 1893, October 15. 1894, October 8. 1895, September 30. 1896, September 29. 1897, October 29.	Year. Date. 1898, October 14. 1899, September 30. 1900, October 8. 1901,
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During the twenty-three years no frost has been recorded earlier than September 13, although a light frost occurred in 1902 on that date and light frosts occurred in September in 1889, 1893 and 1894. Eight years out of twenty-three, killing frosts have occurred in September. October 5 is the average date of killing frosts, while the average date of September frosts is September 25 and of October frosts the 10th day of that month. It should be noted also that many of the frosts recorded as killing frosts were not so severe as to entirely stop the growth of corn and of Kafir-corn. By a killing frost is meant frost hard enough to destroy tomato vines, sweet potatoes, melons, etc.

Corn. - At this Station early varieties of corn, King of the Earliest, Pride of the North, Early Huron Dent, Dakota Dent, Minnesota King and early flint varieties have matured in ninety-five to one hundred days when planted about the first to the tenth of May, while medium early varieties, as Leaming, Kansas Sunflower, Early Mastodon, Iowa Gold Mine, Legal Tender, Silver Mine, Champion White Pearl and Boone County White have matured in from one hundred five to one hundred twenty days. The first varieties named are usually classed in the seed catalogues as ninety-day corn, the last as one-hundred day corn. Corn planted in June, with good growing conditions, will mature in a shorter period than corn planted in the early part of May. Any of the varieties named in the second class planted in June, with ordinarily favorable conditions of growth, ought to mature in about one hundred days. Therefore, these varieties may be planted before June 15 with a fair promise of a crop. After June 15 and until June 25 the varieties which belong to the ninety-day class may be planted with a reasonable promise of a crop, assuming September 25 as being the possible date of the first killing frost. If the frost should hold off until October 5, Juneplanted corn ought to be a safe crop as far as injury by frost is concerned.

Trials at this Station in 1895 and 1896 (average seasons) in planting corn (Leaming variety) at different dates favored early planting. Corn planted May 30 gave about three-fourths the yield of corn planted May 1 to 10. A wet season should favor late planting more than the average season.

In a five-years' trial (1891 to 1896) the early sorts yielded on the average two-thirds as much corn as the medium and late varieties.

Kafir-corn.—In 1895 Red Kafir-corn planted May 20 required one hundred twenty-three days to fully mature seed. In 1890 Kafir-corn planted May 4 was ripe September 12, one hundred thirty days after planting. On the average, Kafir-corn planted in May at this Station takes one hundred twenty-five days to fully mature the seed. The Red Kafir is a week or ten days earlier than the Black-hulled White, but at this Station the last-named variety has yielded five to six bushels more seed per acre in a two-years' trial than the Red variety.

The yield of Kafir-corn as compared with corn in a ten-years' trial at this Station is as follows: Kafir-corn, 43.8 bushels per acre; corn 31.6 bushels per acre. Corn has ten to twenty per cent greater feeding value than Kafir-corn.

At this Station the practice has been to plant Kafir-corn in drill rows three to three and one-half feet apart, with a grain-drill set to drop single seeds an inch apart in the row. If the development of seed is the main object, a little thinner planting is better. Kafir-corn may be planted with a corn-drill or drill corn-planter if special plates are provided to drop the seed at the proper distance. "On warm soils and in late planting, listed Kafir-corn does well." Planted as stated above, one bushel (fifty-six pounds) of seed will plant five acres.

Since Kafir-corn requires more time to mature than corn, since it cannot be so readily converted into money, since it is more difficult to harvest and store, and since it is adapted to dry seasons rather than to wet seasons, it would seem to me advisable to plant a large amount of corn on wet bottom-lands rather than too much Kafir-corn. With a light corn crop, Kafir-corn seed will sell well at a fair price, but with a good corn crop, it can only be used as feed on the farm. If Kafir-corn fails to mature a full crop of seed it may still make excellent fodder; but this is true of corn also.

Sorghum.—Sorghum may be sown broadcast for fodder as late as July 10 or it may be planted in drill rows as described for Kafir-corn. When sown broadcast or in close drills, fifty to one hundred pounds of seed per acre will be required.

Early Amber Cane ripens in about	90 days.
Early Orange Cane ripens in about	100 "
Coleman and Kansas Orange in	120 "

Soy-beans and Cow-peas.—In 1890 soy-beans planted June 7 matured as follows:

Extra Early Dwarf	70 days.
Early Yellow	90 "
Farly Soy	124
Late varieties	128 to 166 days.

The average yield at this Station for twelve seasons was twelve bushels per acre. At this Station soy-beans are usually planted with the grain drill in drill rows thirty to thirty-six inches apart, beans one to two inches apart in the row. The beans may also be planted with the lister in warm

soils or late in the season. Planted in drills thirty inches apart will take three to four pecks of seed per acre. The Early Yellow variety has yielded best at this Station.

Cow-peas may best be used as a forage crop. The hay is similar to alfalfa hay in composition and feeding value, being even richer in protein than alfalfa. In the average season the yield per acre should be three tons. Cow-peas may be sown broadcast and disked in, or they may be planted with the grain drill in close drills. This method requires one and one-half bushels of seed per acre. Some plant in rows and cultivate as described for soybeans, which requires much less seed. The Whip-poor-will is the earliest and one of the best varieties to grow in this State. The Clay, Black and Blackeye are other well-known but later-maturing sorts.

Cow-peas may be planted even later than soy-beans. The crop should be moved for hay when the peas are well formed and the leaves and pods are just beginning to turn yellow. The hay-making process is a difficult one and requires even more care than the making of alfalfa hay. Cow-peas planted with corn and cut for fodder make excellent forage for all kinds of stock and is also recommended for ensilage. Soy-beans and cow-peas belong to the legume family and tend to increase the fertility of the soil and make an excellent rotation crop for corn or wheat.

Millet.—Millet may be sown for forage late in July, if the soil remains in good condition to sprout the seed. Usually early seeding is best, as millet should have a good start before dry weather sets in. Millet may be safely cut for hay any time during the period from complete heading to late bloom. Siberian, Hungarian and common millet will make hay in from sixty to seventy days from seeding. German millet requires seventy to eighty days. The first-named varieties will mature seed in ninety to one hundred days, the last in one hundred ten to one hundred twenty days.

For seed production, Hog or Broom corn millet is preferable to the foxtail varieties. Some early strains of Hog millet will mature in seventy days. Japanese barnyard millet is a late variety but a rank grower and will produce more fodder than the early millets.

Sown broadcast or in close drills requires two to three pecks of the foxtail or broom-corn sorts. One to two pecks of the Japanese variety is sufficient. Sow thinner for seed production than for fodder production.

Rape.—Rape may be sown for pasture as late as August 1. Sown with the grain drill in drills thirty inches apart will require three or four pounds of seed per acre. Rape makes excellent pasture for hogs and may be used for sheep and cattle.

Pasture.—Millet, or millet and oats, or oats and field peas, may be sown for early pasture. Sorghum will furnish a large amount of pasturage and may be sown any time up to August 1. Cow-peas sown broadcast as described above make an abundant and excellent pasture. There is nothing better for dairy cows. Cow-peas sown with oats, sorghum or corn make excellent pasture. When two crops are planted together, use a little more than half as much seed of each as would be used in seeding the crop alone.

Alfalfa.—The fields which have been flooded should be disked as soon as the ground is dry enough. There is a possibility, if the crop has not been under water too long, that the alfalfa may start again. It is practical to reseed the fields at once, after thorough disking and harrowing. In case of an old field in which alfalfa has been cut for seed or allowed to mature, it

will not be necessary to sow nearly so much seed as is usually required for the first planting. Eight to ten pounds per acre ought to be enough to reseed an old field. In case the field has grown alfalfa six or eight years, it may be advisable to rotate with other crops and seed alfalfa on new fields.

Other Crops.—Broom-corn, buckwheat, navy beans and garden crops may be planted, if convenience and time permit, as extras, to bring in a little pocket money.

Soil Moisture.—The soil is full of moisture. Every means should be used to drain off the surface-water at once. But do not forget that Kansas is noted more for her drouths than for her floods. Practice the best methods of tillage and cultivation so as not to waste the capillary water now stored in the soil. With the large store of water now in the soil, by careful cultivation corn should make a profitable crop, even if drouth should prevail in the latter part of the season.

A. M. TENEYCK.

The College is very fortunate in having on hand a sufficient amount of coal—about seventy-five tons. Without this fuel the shops and the power plant would be unable to continue work till the close of the school year. As it is, we will be able to keep up our fires and even supply the city water-works for a short period so that the water-supply will not be stopped. It may take two or more weeks before we can expect coal to make its regular trips from the penitentiary mine at Lansing to Manhattan. Last week the city water-works borrowed several tons of the indispensable black diamonds from the College.

"The fifteen hundred people who went to the College were not neglected," says the Nationalist. "Great credit is due to the members of the Faculty and the students who aided in making people as comfortable as possible at the College. At 11 o'clock Friday night, Professor Otis ordered the farm teams out to help take the frightened people out from town. As the crowds increased, they were distributed in the various buildings. Some had bed clothing, but the greater number spent the night on the bare floor or in chairs. Among the members of the Faculty who did what they could to 'entertain their guests,' were Professors Otis, McKeever, A. B. and R. H. Brown, Dickens, Roberts, Mc-Cormick, Clure, C. E. Paul, Wheeler, Wabnitz, Ridenour, Lund, and Doctors Mayo and Barnes; Janitor Lewis also extended every courtesy. Several students organized to take charge of the foodsupply department. They worked faithfully during the days and nights of the flood until the people returned home. Their work was done without remuneration and showed a commendable spirit. They were: Misses Finlayson, Cottrell, McNutt, Laura Jones, Embry, Melton; Messrs. Kerr, Courter, Cottrell, Edwards. They prepared meals in domestic science hall. and Gasser. Saturday one hundred ten were fed at supper, Sunday about seventy-five at each meal, and Monday a smaller number. interesting sidelight on the economy and care used in preparing and distributing food is the fact that the actual cost for feeding the one hundred ten people Saturday night was \$3.50. They had mush and milk and bread and oleomargarine."

THE INDUSTRIALIST.

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LOCAL NOTES.

Foreman House, of the carpenter-shop, has been busy for a week repairing the windows that suffered in the late hailstorm.

The new ten horse-power gasoline engine received by the machine shop has been placed and set up. It will begin its daily work early next week.

Many of the apprentices are helping different merchants and the Rock Island Railroad Company in repairing flood damages to machinery, electric fixtures, etc.

Many old settlers affirm that corn may be planted with a fair chance of a profitable crop, even as late as June 25. Early sorts are recommended for late planting.

The Farm Department has issued Press Bulletin No. 124, on "Late Crops" offering information and suggestions to the flood sufferers in regard to crops to plant.

The College Faculty is being commended highly for the manner in which they cared for the refugees. All the provisions on hand were furnished free.—Mercury.

Visitors are welcome. During Commencement week all who wish to visit the experiment fields will be furnished a guide, if they will call at the Farm Department office, during the forenoon.

The students of the College lodge mostly on the high ground in the vicinity of the College and few of them were seriously disturbed by the flood. College opened on Tuesday morning as usual, and with a full attendance.

Because of excessive rains, the soil has not been in fit condition to work more than ten days during the month of May. Fourteen inches of rain fell during the month, according to Professor Hamilton, the weather man at the College.

The Farm Department has carefully laid out the experiment plots with alleys between so as to allow visitors to examine the growing crops. Each plot is marked with a stake describing the experiment or giving the name of the variety of grain, corn, etc., planted.

During May there were seventeen rainy days, the total rainfall being nine and one-half inches. The heaviest rainfall during twenty-four hours was two and thirty-eight hundredths inches. The barometer did not show any unusual rise or fall during the month. During the past week we were in a very large storm area, which moved unusually slow.

The keys of the many laboratory tables, cases, doors, etc., of the Chemical Department, are now cared for in a case, of new design, by which three hundred eighty-four keys and their duplicates can be kept conveniently in a space nineteen by twenty-four inches.

The carpenter-shop is making a large oak case with thirty-three drawers and two closets, for the engineering laboratory. Another case, a cement-testing cabinet, for the same laboratory, will be commenced in a few days. The shops have also completed twenty new entomology cases.

This has been an excellent spring to start grass. The Farm Department sowed twenty different varieties and ten mixtures in fourth-acre plots, and nearly all made a good start. Forty acres were seeded to eight different mixtures of pasture grasses. These have also started nicely.

The geological museum has lately received a collection of eighty specimens of the "rock-making minerals" from the well-known Ward national science establishment, at Rochester, N. Y. This is being placed on the shelves of the museum and the necessary rearrangement of the collections are being made.

The first daily paper that reached Manhattan after the flood was a copy of the *Daily Capital* of Saturday morning, brought here on Monday evening by druggist Karl Engel, who had come home from Topeka by way of Burlingame and Alma and had reached Manhattan after a drive of twenty miles.

Professor Eyer was water-bound at Topeka for nearly a week. He reached Manhattan Friday morning, by way of Alma. He at once reported for duty at the College, and being called out by the students, after chapel exercises, gave them a graphic account of his experiences at the State capital and the condition of things down there.

Excessive rains are worse than drought. A careful farmer can often successfully combat with drought by scientific methods of cultivation and crop rotation. He simply has to stand and take the rain. Western Kansas, by practicing the Campbell system or other improved systems of culture, will yet become the land of corn and grain.

The Hereford heifer donated to the Kansas State Agricultural College by D. L. Taylor, of Sawyer, Kan., has been shipped to the College. This heifer was selected by Mr. John Gosling, of Kansas City, when he visited the Taylor ranch. She is a very fine specimen of the breed and will materially add to the equipment of the Animal Husbandry Department.

Wheat is rusting badly. Chinch-bugs were plenty in the grain fields before the heavy rains. Alfalfa is ready to cut, but of rather uneven growth and poor crop. In all of the old fields the leaves have been badly attacked by red rust. One third of the leaves have dropped off from the plants on one field which was examined, and all the leaves are spotted with the rust.

A passenger-train consisting of thirteen coaches arrived from the west on the Rock Island Friday morning and remained till 7:45 o'clock Sunday morning, when the train started back for Clay Center. Some people were taken from the cars late Friday night in vehicles and others went from the Gillett House to spend the night at the College. There were about one hundred forty passengers.—*Republic*.

The Farm Department had started a nice series of experiments. Good progress had been made. All crops except cane, Kafir-corn and soy-beans had been planted. The present prospect, however, is just a little discouraging and it seems probable that little will be accomplished by continuing many of the experiments because of the elements of variation which have been introduced by the adverse weather conditions.

The Chemical Department has placed a tank for distilled water. It is of copper, doubly coated inside with pure tin, and holds one hundred thirty gallons. During the summer, block tin piping will be connected with it, by which the water will be distributed to the various laboratories. The ample supply of distilled water which the condenser of large capacity, previously noticed, and this tank provide, is of great importance to the department.

The Botanical Department has issued a "Key to the Spring Flora of Riley and Pottawatomie Counties, in Flower and Fruit, March to June, Inclusive." The key is a neat little booklet of about one hundred pages, containing an outline of methods for examining and collecting plants and the descriptions of six hundred twenty eight different plant species. It was prepared by Assistant Leslie F. Paull, A. M., and printed in the *Nationalist* office. The book is sold by the department at seventy-five cents per copy.

The experiments began by the Farm Department, in soil cultivation for the conservation of soil moisture, have been rendered of no effect by the excessive rains of the last few weeks. greatest injury to crops occurred from the wind and hail-storm of Tuesday afternoon, May 26. Wheat was lodged some and perhaps ten per cent of the heads were broken over. Other grain received little injury. Corn was apparently injured most. The stalks which had reached a height of four to six inches on some fields were often broken off close to the ground and the leaves were torn to shreds. Two and seventy-five hundreths inches of rain fell in two showers, May 22 and May 26; five inches fell in less than ten hours, May 28. May 28 found the crops already suffering from too much wet. The soil refused to absorb any more water and all cultivated fields were badly washed and cut up by the rushing torrents. Listed corn has been badly washed out, covered up or drowned out. This is a year when the level planting apparently starts out with a great advantage over the listed corn. About twenty acres of corn planted with the drill planter is still in fair condition and promises a fair stand in spite of the rain and hail. The corn which was cut down by hail was not destroyed, but is starting up again from the ragged stubs.

Enos Harrold, for several years foreman of the machine-shop here, and for the last five years an instructor in the Department of Electrical and Mechanical Engineering of the Michigan School of Mines, Houghton, Mich., has been appointed assistant superintendent of the Tamarack and Osceola Stamp Mills at a better salary than teaching work commands. The position is one of much responsibility and promise for the future, these mills being the second largest in the copper district. Mr. Harrold now lives at South Lake Linden, a few miles from Houghton.

ALUMNI AND FORMER STUDENTS.

C. A. Gingery, '02, is located on a farm near Caldwell, Kan., and writes for the Experiment Station bulletins to assist him in his business.

Miss Helena Pincomb, '01, teacher of domestic art in the Pittsburg, Kan., schools, will spend the remainder of the spring term here, studying domestic science and chemistry.

E. W. Doane, F. W. Haselwood, D. M. Ladd, H. McCaslin, and Geo. Martinson, all of the class of 1901, and students of Leland Stanford, Jr., University, escaped the recent epidemic of typhoid fever in Palo Alto, Cal. There were over two hundred cases, a number of which were fatal.

Miss Louise Cowell [second-year, 1887], a former resident of Manhattan, and also Clay county, Kansas, spent the past week visiting friends of the Sunflower State at the national capital while on her way to a prolonged visit with parents in England. Miss Cowell is now a teacher in a kindergarten school in St. Louis. —Capital.

In a recent letter to Professor Otis, James Laird McDowell, '92, states that he has taken a homestead on the Fort Hall reservation, near McCammon, Idaho. He says that he is in need of all the "book larnin" that he can get and wants the bulletins sent to him. He lives in a settlement of Mormons, whom he considers worse than heathen and fit subjects for missionary work.

Rev. W. C. Howard, '77, writes to Professor Walters, from Ione, Cal.: "The Industrialist is a very welcome weekly visitor in our home, away here on the Pacific coast. I rejoice in the constant prosperity and growth of my alma mater. You and Professor Popenoe are about the only members of the Faculty with whom I am acquainted, and it is a pleasure to me to notice the development of your work."

Married, at the home of the bride's mother, Miss Ruth R. Bayles and Alonzo C. Havens ['96], of Dwight. The ceremony was performed at eight o'clock Wednesday evening, May 20, by Rev. J. W. Bayles, of Onaga, brother of the bride. Only the relatives were present. Mr. and Mrs. Havens left Thursday for their home in Dwight. They have many friends who wish them happiness and success.—Nationalist.

Commencement Week, 1903.

Saturday, June 13.

Society Commencement Lecture to Invited Guests, College Chapel, 8 P. M., Prof. A. M. Newens, Iowa State College, Ames, Iowa.

Sunday June 14.

Baccalaureate Sermon, College Chapel, 4 P.M., by Rev. O. B. Thurston, Pastor First Congregational Church, Manhattan.

Tuesday, June 16.

Examinations from 9 A.M. to 3:35 P.M.

Class Day Exercises to Invited Guests, Opera-House, 8 P.M.

Wednesday, June 17.

Examinations from 9 A.M. to 12:20 P.M.

Business Meeting of the Alumni Association, College Chapel, 3 P.M.

Alumni Reunion, Women's Gymnasium, 8 P.M.

Thursday, June 18.

Annual Address, College Chapel, 10 A.M., by Rev. Thos. E. Green, Pastor Grace Episcopal Church, Cedar Rapids, Iowa.

Presentation of Diplomas.

Cadet Band Concert on Campus, 2 P. M.

Military Drill, 3 P. M.

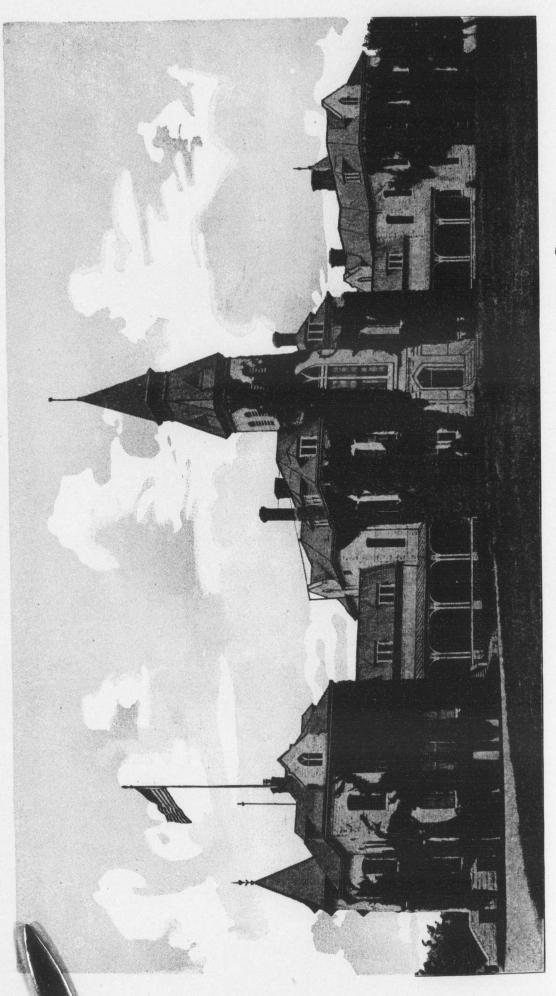
President's Reception to Invited Guests, Hotel Gillett, 8 to 11 P.M.



KANSAS STATE ACRICULTURAL COLLECE

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William L. House



ANDERSON HALL (MAIN BUILDING), KANSAS STATE AGRICULTURAL COLLEGE.

THE INDUSTRIALIST.

VOL. 29.

MANHATTAN, KAN., JUNE 16, 1903.

No. 33

THE AGRICULTURE COURSE.

THE importance of the agriculture course in this and similar institutions is preëminent, and widespread interest in the subject exists. As the course here has just undergone another revision, a presentation of a detailed analysis of it seems timely. Such a presentation must be far more valuable if made comparative. In the following article the revised course will be compared with that which has been in force for the last four years, and with that recommended by committees of the Association of American Agricultural Colleges and Experiment Stations.

In November, 1894, the association just named appointed a committee on entrance requirements, courses of study, and de-This committee reported two years later, and the report may be found in Bulletin No. 41 of the office of experiment stations. This committee made recommendations concerning the entrance requirements that should be maintained at the several agricultural colleges, and certain general studies that should be included in all courses leading to the degree of bachelor of science in these colleges, leaving to another committee the task of recommending the special and technical studies that should be added for the course in agriculture. The general studies, in the judgment of this committee, should make up about two-fifths of the course. The recommendations of this committee, to which attention will be given in this article, are included in the tables that follow. After a spirited discussion, embodying some sharp criticism, the recommendation of the committee was adopted by a vote of thirty-four to eleven, with a prefatory declaration "That the schemes of studies presented for admission to the colleges, and for graduation therefrom, are suggestive and tentative, not to be considered as necessary or binding upon the colleges which may assent to the adoption of said report, and subject, without prejudice as to equal efficiency, to such substitutions of other studies of equal and similar educative value for those named in the schemes as the peculiar conditions of the several colleges may make necessary."

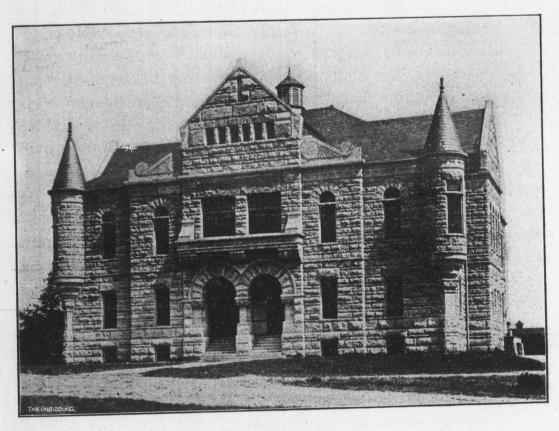
At the same meeting, a committee on methods of teaching agriculture made a report of progress. This committee has been continued up to the present time, and its recommendations have done much to systematize agricultural instruction, and are worthy of earnest consideration in connection with a study of the proper balancing of an agricultural course. In this first report the committee proposed a tentative scheme for the division of what is commonly called agriculture into several branches, giving each a definite name. The nomenclature suggested, while sounding somewhat formidable at first, is gradually coming into general use, and contributes much to clearness of thinking. It is as follows, agriculture as a whole being separated into five divisions:

- 1. Agronomy, or agriculture (technical). Climate, soils, fertilizers, crops-plant production.
- 2. Zoötechny, or animal industry...... Animal physiology and animal production.
- 3. Agrotechny, or agricultural technol-
- 4. Rural engineering, farm mechanics, or
- 5. Rural economics, or farm manage-
- Agricultural industries, e.g., dairying, sugar making.
- farm equipment...... Roads, drains, irrigation systems, farm buildings, etc.
 - ment. General policy of farm management, rural law, agricultural bookkeeping, etc.

Table I. gives a comparison of the agriculture course in force for the past four years, the revised one, and the recommendations of the committees of the Association of American Agricultural Colleges and Experiment Stations. In reckoning the time to be given to the several branches, the association committee counted one hour of class-room work as equivalent to two hours of laboratory work or other duties not requiring home preparation, and in its publications the figures given are obtained by dividing the time for laboratory work by two and adding the quotient to the classroom time. It has seemed, however, that an estimate of the time demanded of the student would be better shown by letting the time required by duties not carrying home study stand, and multiplying the time of such as do, by two. Either method brings numbers that are comparable among themselves, and is based upon the supposition that at least as much time is required in the

preparation of a subject as is given to it in the class room. This is certainly a low estimate. Many studies ought to receive twice as much time as that; but on the other hand some may take less.

The studies are classified under the headings used by the association committees, as far as possible. Where no figures are given, the subject is not included in that course, at least not under that name. It is obvious that there is room for difference



Agricultural Hall.

of judgment as to the proper placing of a study. Thus animal nutrition might, without impropriety, be counted under agricultural chemistry, physiology, or zoötechny; it has been placed under the last after careful study of the syllabus of a course in zoötechny suggested by the association committee on methods of teaching agriculture. The association committees did not make recommendations concerning the amount of time to be given to the laboratory exercises or practicums in each case, excepting in the general studies where 75 hours were assigned to laboratory work in physics and the same to chemistry. This has been incorporated with the time for class-room work in those instances. As the committees recommended fifteen hours of class-room work and ten of practicums, including military drill, throughout the

THE INDUSTRIALIST.

TABLE I.

K. S. A. C., K. S. A. C.,									10
			A. C. 9-1903.	,			. A. C.	,	S. S.
	A	В	C	D	A	В	C	D	D
ENERAL STUDIES:									
Algebra	120	240		240	60	120			
Geometry	122	244		244	120	240			
Trigonometry	59	118		118	57	362	151		1
Physics Elementary Physics	181 60	362 120		362	181 60	120	151	513	2
Physics	121	242			121	242	121		
Chemistry	149	298	145	443	149	298	205	503	2
Inorganic Chemistry	86	172	45		86	172	90		
Organic ChemistryQualitative Analysis	35 28	70 56	100		35 28	70 56	115		
English	299	598		598	299	598		598	4
Oratory			119	119	130	260		000	1
Modern Languages						:			6
Psychology Ethics or Logic.					12	24		24	1
Political Economy	62	124		124	59	118		118	1
General History	178	356		356	121	242		242	li
Constitutional Law									li
Civies	59	118		118	57	114		114	
Total, General Studies	1229	2458	264	2722	1245	2490	356	2846	24
ECHNICAL STUDIES:	1.0.70	-		-		-		2010	=
Agriculture	445	890	142	1032	564	1128	210	1338	9
Agronomy	87	174		174	144	288	28	316	2
Agriculture, first year Tillage and Fertility	30 57	60 114			30	60			1
Crop Production		114			57	114			1
Grain Judging							28		1:::
Agricultural Physics					57	114			
Zoötechny	242	484		484	296	592	30	622	3
Agriculture, first vear Breeds and Breeding	30 57	60			30	60			
Breeds of Livestock	91	114			59	118			
Stock Judging							30		1:::
Animal Breeding					57	114			
Hygiene of Farm Animals	38	76			31	62			
Chemistry of Foods	30	60			62	194			
Stock Feeding	87	174			57	124			
Agrotechny	59	118	120	238	62	124	124	248	1
Dairying	59	118	120		62	124	124		
Rural Engineering			22	22			28	28	1
Surveying Rural Economics	57	114	22	114	62	124	28	124	· · i
Agricultural Economics	57	114		114	02	164		124	1
Farm Management					62	124			
Horticulture and Forestry	176	352	120	472	176	352	120	472	3
HorticultureForestry	60 59	120			60	120			
Vegetable Gardening	57	118 114	• • • • • •		59 57	118			
Horticulture Industrial			120				120		
Veterinary Science	171	342	31	373	146	292	62	354	3
Bacteriology	50	100	31		25	50	62		
Veterinary Science	121 62	242 124		194	121	242	*****	100	
Botany	176	352	89	124 441	59 176	118 352	59 117	177 469	3 3
Elementary Botany	60	120	30		60	120	30	100	
Plant Morphology	59	118	59		59	118	59		
Plant Diseases and Breeding Zoölogy, including Entomology	57	114	•••••		57	114	28		
Zoölogy	90	180 60	90	270	119	238 118	89. 59	327	2
Entomology	60	120			59 60	120	30		
Physiology	69	138		138	71	142	29	171	30
Hygiene	12	24			12	24			
PhysiologyGeology	57 57	114	• • • • • • •		59	118	29	****	
Meteorology	01	114		114	57	114		114	12
Drawing	30	60	60	120	61	122	60	182	12
Shop Work			242	242			242	242	
Agriculture Industrial, additional			62	62			119	119	
Totals, Technical Studies	1276	2552	836	3388	1429	2858	1107	3965	349
Totals, General Studies	1229	2458	264	2722	1245	2490	356	2846	242
Required Military Drill			356	356			356	356	
Grand Totals	200	100000000000000000000000000000000000000	-						100

A. Periods given to recitation of studies requiring home work.

B. A multiplied by two on the assumption that each study requires at least as much time in its preparation as the recitation period. More than that ought to be given as a rule.

C. Periods given to laboratory, shop or other duties not requiring home study.

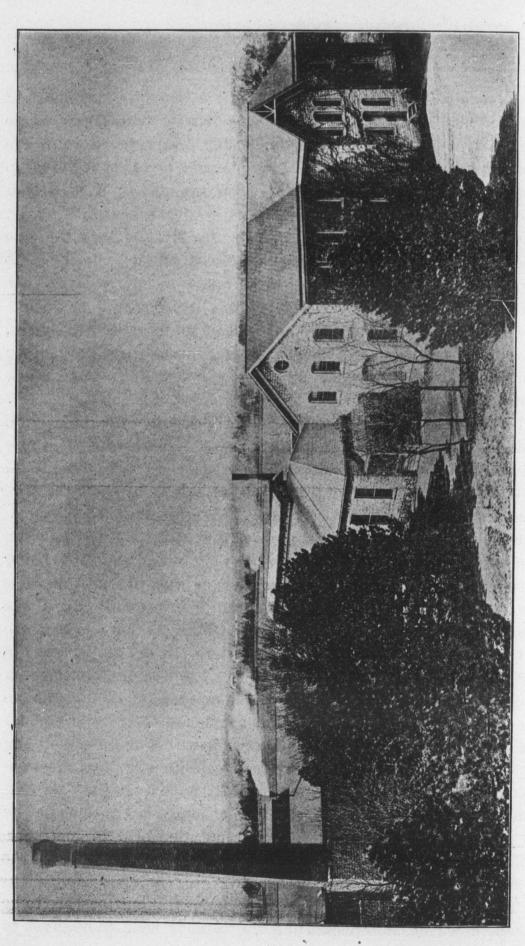
D. B plus C, that is, the total time required of the student on the preceding assumptions.

four years of thirty-six weeks each, there would be 1440 hours of practicums. Of this time 150 hours having been assigned to chemistry and physics, the balance, 1290 hours, is shown in the table summarizing the technical studies, and is a part of the lump sum in Table I. The hours have been summed up and carried into the columns headed D, opposite the general headings only. Under agriculture, however, there is the division into the five chief branches, each of which is subdivided, and it seemed well to carry out the sums for each of these five divisions, as well as for agriculture as a whole, into the columns D. The numbers opposite agriculture are therefore the sum of those under agronomy, zoötechny, agrotechny, rural engineering, and rural economics; and these in turn summarize the studies under these titles, respectively.

In Tables II. and III., summaries are presented for the general and the technical studies respectively. Examination of these shows most clearly the relations of our course to that of the A. A. A. C. E. S., while study of Table I. is necessary to show the rela-The latter phase of the question of the two K. S. A. C. courses. tion will not be discussed to any extent at this time, having been treated in a general way in a previous article, and the table being believed to be sufficiently clear for such as wish to study the matter in more detail. A comparison of our courses with that of the association, shows in the grand totals of Table I., that on the whole our requirements are materially heavier. In the old course the difference is 9.4 per cent, in the new 21.2 per cent. Considering class-room exercises and practicums separately, we find that in the old course we were 12 per cent heavier in the former and 1.1 per cent in the latter; in the new course we are 19.6 per cent and 26.3 per cent heavier, respectively. Realization of these facts enables us to understand why our students have little time for outside diversions to which the students of many institutions devote so much attention. In fact, the grand total of 7167 hours required in our course is almost exactly ten hours for each of the 712 college days of the four years.

The recommendations of the association committees are to be taken, however, as representing the relative time to be given to





the several branches rather than the absolute amount. When we examine the tables from this point of view we find that there are some noticeably close approximations to agreement, but at the same time there are some still more striking dissimilarities. The most important of these, undoubtedly, is that of modern languages. The association recommends two years to be given to this line; we do not give an hour. This lack undoubtedly handicaps our students who desire to pursue scientific studies to any great extent, and is an element of weakness that in time should be corrected. On the other hand, the time given to chemistry, physics, botany, entomology, horticulture and agriculture is more than correspondingly greater. In the case of agriculture itself, which may be assumed to be of special interest, the old course gave 6.2 per cent more, and the revised course gives 37.7 per cent more than the association course. The lack of psychology, ethics and logic in our course is to be noted with regret. Civics probably covers about the same ground as is frequently given under constitutional law. The failure to include meteorology as such in our course is not as vital as might seem, since instruction in that is given in the course in physics. We are noticeably lighter in geology, physiology, and agricultural chemistry, but in the last the deficiency is more than made up by the greater amount of time given under the general head of chemistry. The reports of the committees of the association make no mention of shop work, a line of training in which we are strong, and which we regard as of high value in various ways.

TABLE II.

	H		A
	100	1903	1 .
	S		-
GENERAL STUDIES.—SUMMARY.	A. C 1903	! A	A.
GENERAL STUDIES.—SUMMANI.	3.C	: 0	0
			E
	:	:	S
	-:	:	:
	240	120	15
Algebra	1000	240	8
Reometry	118	114	8
Physics*	362	513	22
Themistry*	443	503	22
In celicib	000	598	40
hantour	110	260	
Today Tonguage			68
		24	12
Athias on Logia		118	12
Indianal Tanamamar	124 356	242	16
low and Tietowy	000	212	10
longtitutional Law	118	114	10
Divies			-
Totals	2722	2846	242

^{*}Including seventy-five hours' laboratory work.

TABLE III.

		. A. C. 9–1903		A. C.		A. A. E. S.
TECHNICAL STUDIES—SUMMARY.	laboratory work, etc	Totals	Industrials, laboratory work, etc.	Totals	Practicums	Totals
Agriculture Horticulture and Forestry. Veterinary Science, including anatomy. Agricu'l Chemistry, in addition to general requirement. Botany, including vegetable physiology and pathology. Zoölogy, including entomology. Physiology Geology Meteorology Drawing Shop Industrials. Agri'ture or horticulture industrials not included above. Military Drill	89 90	1032 472 373 124 441 270 138 114 120 242 62 356	210 120 62 59 117 89 29 60 242 119 356	1338 472 354 177 469 327 171 114 182 242 119 356		973 366 366 366 240 360 240 120
Totals	1192	3744	1463	4321	1290*	3492

^{*}Includes military drill and science.

A course of study can not be properly judged without a knowledge of the requirements for entrance upon it, and the following table is presented to make possible a comparison from this point of view of the courses of study under discussion:

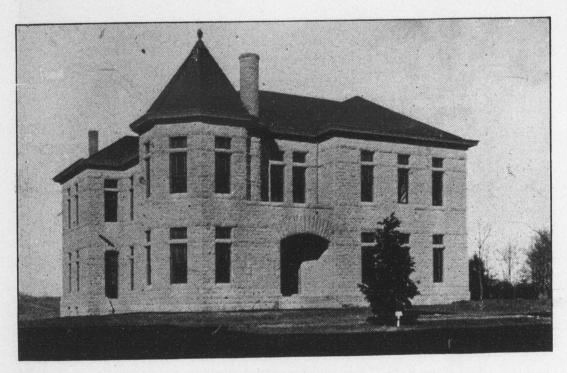
TABLE IV.—COMPARISON OF ENTRANCE REQUIREMENTS.

K. S. A. C.	K. S. A. C.	A. A. C. E. S.				
1899-1903	1903—	Minimum	Standard			
Reading Writing Spelling Geography Arithmetic U. S. History English Grammar El. Physiology Bookkeeping Eng. Composition Algebra, through simple equations of one unknown quantity	Reading Writing Spelling Geography Arithmetic U. S. History English Grammar Element'y Physiology Bookkeeping English Composition English Readings Freehand Drawing Algebra, through quadratic equations of one unknown quantity	Physical Geography U. S. History Arithmetic, including the metric system Algebra, to quadratics English Grammar and Composition, together with the English requirements of the New England Association of Colleges and Preparatory Schools	Physical Geography United States History Arithmetic, including the metric system Algebra, to quadratics English Grammar and Com position, together with the English requirement of the New England As sociation of Colleges and Preparatory Schools Plane Geometry One foreign language One of the natural sciences Ancient, General or Eng-			

A statement of the English requirements of the New England Colleges and Preparatory Schools is not at hand, but it seems clear that as a whole the present entrance requirements here are fully equal to, and probably in advance of, the minimum suggested by the American Association of Agricultural Colleges and Experiment Stations, though still below the standard requirements. The Association recognizes that at present probably comparatively few of the Agricultural Colleges can reach the standard which they deem it desirable for all to approximate as nearly as

possible. The requirements in these several courses must be taken into account in considering the time given to certain of the subjects in the courses themselves. Thus algebra appears to have less time in the revised course than in the old course, but really the total requirements in algebra are the same, an additional term of algebra hitherto in the course being now required for entrance. Free-hand drawing and a term's work in English readings have also been added to the entrance requirements and additional work in both these subjects placed in the course.

J. T. WILLARD.



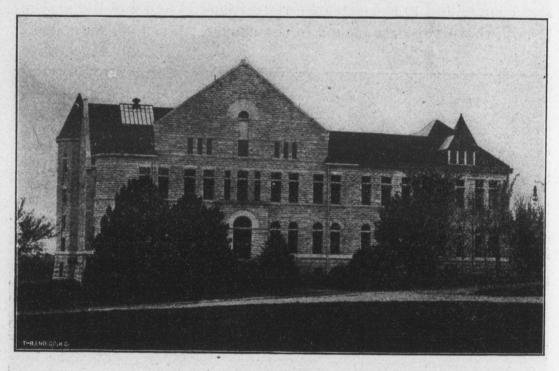
Kedzie Hall.

NEW BUILDINGS.

OF the buildings for which appropriations were made by the last legislature none will prove more helpful to the great body of students than the new auditorium. For many years the old chapel in the main College building has been inadequate to seat the Faculty and the students, not to mention that on many occasions hundreds of friends and patrons could not get the desired entrance. The old chapel, inclusive of the rostrum, has scarcely seven hundred seats, while the average daily attendance at College, including the Faculty and their assistants, has been about twelve hundred. Nearly half of the student body could not be assigned to seats. The postgraduates, the preparatory students, the specials and the apprentices, together with about a hundred

regular students, were necessarily excluded unless they could find the seats of occasional absentees.

Last winter, thanks to the energetic efforts of our friends in the legislature, an appropriation of \$40,000 was obtained to meet this long-felt want, and drawings and specifications are now being perfected by Architect J. C. Holland, of Topeka, for an auditorium that will seat in the neighborhood of three thousand persons.



Fairchild Hall.

The building will be located southeast of the library hall and face north and east. It will be a simple, substantial and dignified looking stone structure of a character in harmony with the other College buildings. It will be heated from the central heating plant and lighted with electric light. A tunnel will be dug through the hill from this new building to the heating plant for the purpose of laying a steam pipe line that will heat all the buildings south of the Physical Science Hall.

It is expected to put the auditorium under roof before the winter makes outdoor work impossible, and to finish it before next Commencement, so that the class of 1904 will have the pleasure of "house warming" it before they leave their College home.

Another building that will add greatly to the efficiency of the College, and especially to the equipment of the Agriculture Course, is the new creamery hall. Four years ago the legislature appropriated \$25,000 for the purpose of erecting a building for

the Agricultural Department, with the understanding that a main part of the structure should be given to laboratories in practical dairying; but the increase of students in the Agriculture Course was such that the building proved inadequate from the very start. The matter was brought to the attention of the last legislature and, as in the meantime the Agricultural Department had been divided into three different departments, it seemed best to ask for a sep-



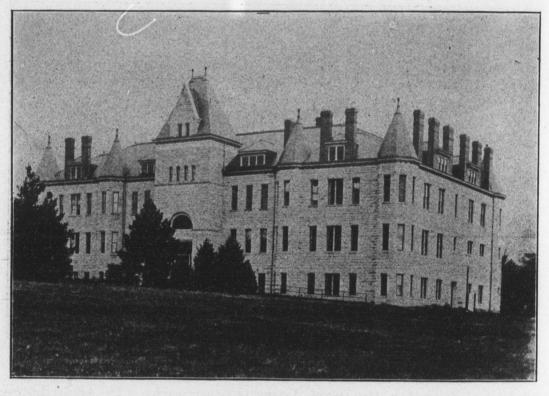
Armory.

arate building for the new Dairy Department. In accordance with this request an appropriation of \$15,000 was secured.

The new dairy building will be erected midway between the present Agricultural Hall and the Horticultural Barn. Its main story will measure seventy-five by one hundred feet, and its height from the floor of the basement to the floor of the attic twenty-five feet. The exterior will be in keeping with that of the other College buildings—range stone work, tin shingle roof, and large windows. The main floor will contain a class room twenty-nine by thirty-two feet, a cheese room twenty-two by twenty-nine feet, and a farm creamery room thirty-nine by twenty-nine feet, and a farm creamery thirty-two by twenty-nine feet. In addition to these large rooms there will be an office with vault, private office and lavatory, a milk-receiving room, a refrigerator room, and a skim-milk room. The basement will contain a large cheese cellar, a lavatory for the students, a dressing room, and

an exhibition room for dairy apparatus. The building will face west, as it is intended to extend the walk on the east side of the new Physical Science Hall northward toward the barns.

The plans and specifications for this building were prepared by Prof. J. D. Walters who will also superintend its erection and that of the auditorium. The contracts will be let early in July and the dairy building will probably be ready for occupation by Decem-



Physical Science Hall.

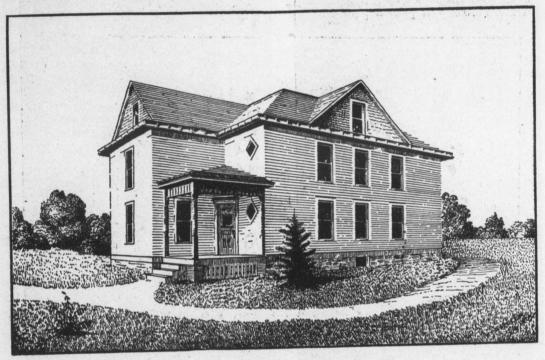
ber. Thus the Kansas State Agricultural College grows and increases its usefulness.

AT FORT HAYS BRANCH EXPERIMENT STATION.

Contract was made early in May for the erection of a new boarding hall at the Fort Hays Branch Experiment Station. The building, a perspective of which will be found in this number of the Industrialist, will be two stories high, measure thirty by fifty feet, and contain a vegetable cellar, a furnace cellar, a large sitting-room, dining-room, and kitchen, two bath-rooms and lavatories, and seven bed-rooms. Several additional bed-rooms may be located in the attic. The building will cost about \$2,000 without the heating furnace and the plumbing, and it is expected that the contractor will be able to finish it some time in July.

Another building for which plans and specifications have al-

ready been completed is a large horse barn, forty-two by fifty-two feet, with a stone basement containing stalls for sixteen horses, a large hay floor twenty feet high, several feed bins, and a room for the stable man. The building will cost about \$1,000 and it is expected to begin its erection at once. In addition to the above-named amounts appropriated by the legislature for the two buildings named, there is available for the College a large quantity of

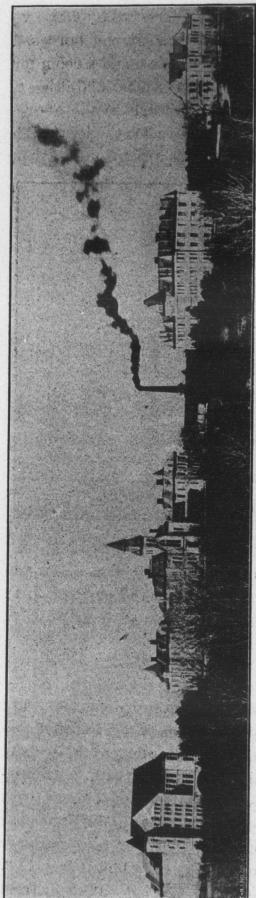


The Boarding Hall.

lumber and stone from the old fort barracks. The plans and specifications of both new buildings were prepared by Prof. J. D. Walters, while their construction is being looked after by Supt. J. G. Haney, of the Branch Experiment Station.

COLLEGE STATISTICS.

THE short course in dairying and the apprentice courses were introduced in 1897. The short courses in agriculture and domestic science were introduced in 1899. The effect of these short courses on the regular College work was watched with considerable interest. The following table shows the total enrolment, with the per cent increase, and the total enrolment in the four-year College classes, with per cent increase. The per cent increase this year (15.8) is the greatest since 1881–82, when it was 17.3. This would indicate that the long courses are not suffering from the introduction of the short courses.



General View of Buildings and Grounds.



College Cadet Band.

ENROLMENT FOR THE PAST FOURTEEN YEARS.

Valo		ment in ourses.	Enrolment in four-year courses.			
YEAR.	Total.	Per cent increase.	Total.	Per ct.		
1889-90	514	15.5	513	15.2		
1890-91	593	15.4	593	15.5		
1891-92	584	-1.5	584	-1.5		
1892-93	587	0.5	287	0.5		
1893–94	555	-5.5	555	-5.5		
1894–95	572	3.2	567	2.1		
1895–96	647	13.1	644	13.6		
1896-97	734	13.4	728	13.0		
1897-98	803	9.4	783	7.6		
1898-99	870	8.3	790	0.9		
1899-00	1094	25.7	906	14.7		
1900-01	1321	20.8	1043	15.1		
1901-02	1396	5.7	1117	7.1		
1902-03	1574	12.8	1293	15.8		

The following comparison of attendance by classes for the past and present years shows an increase in nearly all classes, the most noticeable exception being the dairy course.

SUMMARY.

		1901-'02.		1902–'03.						
CLASSES.	Men.	Women.	Totals.	Men.	Women.	Totals.				
Graduate	15 42 81 130	17 23 39 76	32 65 120 206	13 57 97 152	11 29 44 77	24 86 141 229				
Freshmen	280 239 7 66	116 59 12	396 298 19 66	326 255 16 37	145 87 20 1	471 342 36 38				
Farmers' short course Domestic Sci. short course Apprentices Counted twice	124 84 51	1 41 3 8	125 41 87 59	123 76 43	63 2 14	123 63 78 5 7				
Totals	1017	379	1396	1109	465	1574				

A year ago the figures were given showing the number of students in the different courses. To the table published then is added the figures for the present year. Last year 76.6 per cent of the students were in the technical courses; this year 80 per cent.

STUDENTS IN THE DIFFERENT COURSES.

				ø M	WOMEN.							
YEAR.	Total.	Agricul- ture. Engineer- ing.				neral ence.	The second second second	neral ence.	Domestic Science.			
		No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per cent.	No.	Per	
1898–99 1899–00 1900–01 1901–02 1902–03	870 1094 1321 1396 1574	127 257 378 407 457	22.1 34.1 39.6 4(·.0 41.2	160 201 293 367 420	27.8 26.7 30.7 36.1 37 9	287 296 284 243 232	50.1 39.1 29.7 23.9 20.9	193 170 109 83 82	65.4 50.0 29.8 21.9 17.6	103 170 257 296 383	34.6 50.0 70.2 78.1 82.4	



Domestic Science Laboratory.

From the Douglass Tribune: "Prof. J. D. Walters, of the Kansas State Agricultural College, was present at the high school commencement and delivered an educational address. His address was full of important facts upon educational lines. It indicated that the speaker had made a deep study of his subject, and was presenting his hearers with facts different from the common-place surface view."

IMPROVED STOCK AT THE AGRICULTURAL COLLEGE.

THE Twelfth Biennial .Report (1899-1900) of this College contains the following item: "The College farm does not have a single pure-bred animal of any kind." This fact did not sound very well to the improved stock breeders of the State, and at their annual meeting in 1901 the subject was agitated and several enterprising breeders made donations of some of the best animals in their herds. Because of their liberality toward the College and the State, the following names are placed on our

ROLL OF HONOR.

CATTLE:

J. M. Foster, Topeka. Hereford Bull.
C. Morrison. Phillipsburg, Red Polled Heifer.
W. O. Parks, Atchison, Aberdeen Angus Bull.
M. R. Platt. Kansas City (Mo.), Two Galloway Heifers.
Frank Rockefeller. Belvidere, Hereford Bull Calf.
Steele Bros.. Belvoir, Hereford Heifer.
D. L. Taylor, Sawyer, Hereford Heifer.
Geo. W. West. Silver Lake. Hereford Heifer.
John Warner, Manhattan, Shorthorn Heifer.

Hogs:

POLAND CHINA.

Herman Arndt, Templin.
Geo. H. Barth, Iola.
John Bollin, Kickapoo.
Deitrich & Spaulding, Richmond.
John Goode, Lenexa.
W. F. Hunter, Mitchell W. E. Hunter, Mitchell.
A. M. Jordan, Alma.
C. S. Kelley Paxico.
G. W. Kelley, Abilene.

H. M. Kirkpatrick & Son, Wolcott.
T. J. Lawhead, La Cygne.
J. D. Marshall, Walton.
Chas. Morrison, Phillipsburg.
O. R. Mor-e & Sons, Mound City.
A. O. Northrup, Boyle.
Herman Smith, Colwich.
J. W. Vining, Wilsey.

DUROC-JERSEY.

Peter Blocher, Richland. G. G. Burton, Topeka. J. B. Davis, Fairview. J. U. Howe, Wichita. W. E. Mason, Haddam.

A. D. & H. L. Perrin. Prescott. H. W. Strinmeyer, Volland. J. T. Tredway, La Harpe. J. M. Williams, Frankfort.

BERKSHIRE.

C. A. Stannard, Emporia.

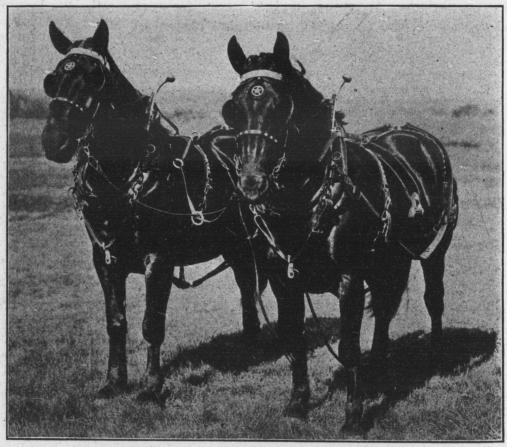
Chas. E. Sutton, Russell.

R. J. Heachum, Manhattan, Eight Black Minorea Hens. The Smiths, Manhattan, Four Buff Rocks.
P. H. Mahon, Clyde. Eleven R. C. B. Leghorns.
W. A. Lamb, Manhattan, S. C. Brown Leghorn Cock.
J. R. Young, Manhattan, Barred Rock Cock.
C. W. Peckham, Haven, Trio Mammoth Bronze Turkeys.
J. C. Robison, Towanda. Trio Imp. Pekin Ducks.
Scott Bros, Westmoreland, Pair Peafowls.
P. J. Keys, Winchester, Fifteen Golden Wyandotte Eggs.
S. J. Norton, Manhattan, Twenty-five Barred Rock Eggs.
Ross Bros, Manhattan, Fifteen Buff Wyandotte Eggs.
Chas, Steinberger, Wa Keeney, Two Buff Cochins.

The attention of the legislature was also called to the poverty of the Agricultural College in the line of live stock. The response came in an appropriation of five thousand dollars per year for two By judicious management on the part of the Board of Regents, superior animals were obtained at remarkably low figures. We now have ten breeds of pure bred cattle with the number in each as follows: Beef Breeds-Aberdeen Angus 6, Galloway 5,

Hereford 7, Shorthorn 6. Dairy Breeds—Ayrshire 6, Guernsey 3, Holstein-Friesian 4, Jersey 5. Dual Purpose Breeds—Polled Durham 2, Red Polled 6,

The teams used on the College Farm were far from being a credit to the State. Recognizing the need of better teams, both for work and class instruction, the Board of Regents provided for the purchase of a team of pure-bred Percherson mares in the

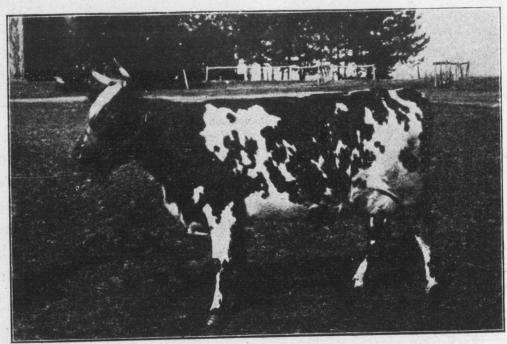


Lottie and Maggie, of the Kansas State Agricultural College.

summer of 1901. In March, 1903, the Board of Regents provided for the purchase of five additional teams, one team being for the use of the Horticultural Department. In the purchase of these last five teams funds would not permit getting all pure breds. However, Capt. J. S. McDowell, who was chosen to make the selection, secured some very fine specimens, several of them being fifteen-sixteenths Percheron and as fine individually as pure breds. One of the teams is seven-eights Clydesdale. After the above teams were purchased one of the Clydesdale mares dropped a mule colt and one of the grade Percheron mares a stallion colt. One of the pure-bred mares referred to above dropped a mare colt.

In the purchase of this live stock the aim has been to secure typical and representative animals of the various breeds. That this has, in a large measure, been done is shown from the cuts illustrating this article and from the scores and remarks of expert judges who judged the animals at our judging school.

The Ayrshire cow, Star of Hillview, has a record of 8000 pounds of milk and 400 pounds of butter the first year of her lactation period. During the past year (second lactation period) she produced 9600 pounds of milk and 436 pounds of butter. Allowing one pound per person per week, this is more than enough butter from one cow to keep a family of eight for one year.



Star of Hillview 11455.

The Guernsey bull, Shylock of Darlington, is a typical animal of his breed. His dam, Nubia's Vesta, produced 556 pounds of butter in six months. Mr. J. F. Schlappi, who was superintendent of the feeding department of the Pan-American dairy test, while in attendance at the State Dairy Association, scored this bull before the class and gave him 98 points out of a possible 100. Mr. Schlappi said: "I would not want an animal of better shape, and it would be hard to find an animal with any better skin and hair than this bull has. I think this animal is a very fine one and good enough for any man's herd. The College ought to be congratulated on having such a fine animal."

The Hereford heifer, Azelda, was raised by the College. Her

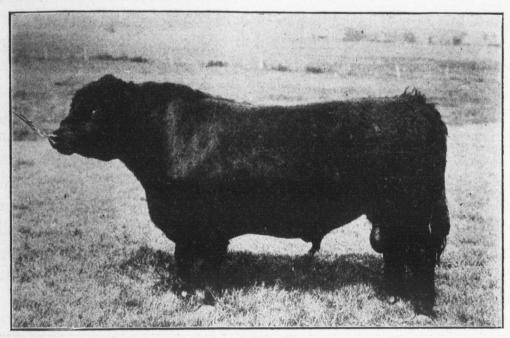


Shylock of Darlington 4579.

dam was Perfection Maid, a fine Hereford cow donated to the College by Steele Bros., of Belvior, Kan. In speaking of this heifer Mr. John Gosling, of Kansas City, said, at the judging school, that she was a typical beef animal, being close to the ground, blocky, and heavy enough for her age. Some Herefords would be heavier, but they would not be as well formed. On the score card Mr. Gosling gave the heifer $97\frac{5}{8}$ points out of a possible 100.



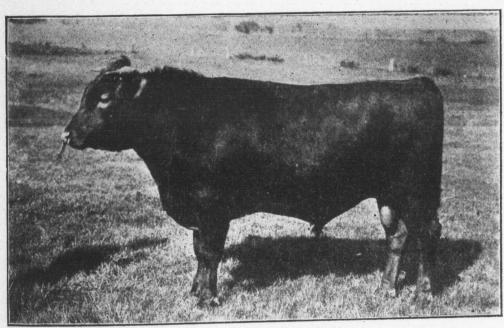
Azelda.



First King of Avondale 19420.

The Galloway bull, First King of Avondale 19420, was purchased of O. H. Swigart, Champaign, Ill. He was a prize winner both at the Chicago International and the Pan-American exposition. Mr. Gosling spoke of this bull as a very fine specimen of the Galloway breed. He scored 985 points out of a possible 100.

The Short-horn bull, Ravenswood's Admiration, purchased last February, is a remarkably fine specimen of his breed. He is sired by Lavender Viscount, the winner of the Armour trophy for best bull at the American Royal at Kansas City in 1900 and

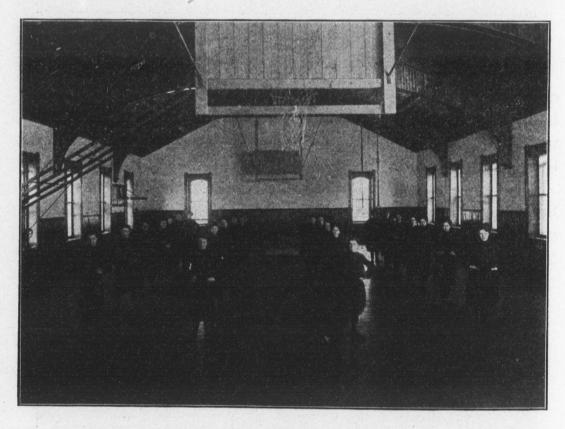


Ravenswood Admiration 186157.

grand champion at Chicago International in 1901. This bull is used as a model for the classes in stock judging. He has very few faults, as is shown by the fact that Mr. Gosling scored him $97\frac{5}{8}$ points out of a possible 100.

Enough has been said in regard to the stock to show that the Kansas State Agricultural College has some very good specimens of live stock. We do not have all that we need, either for class work or for experimental purposes, but considering that two and one half years ago we had practically nothing in the way of improved stock we think we have made a good start, thanks to the enterprising breeders of the State, the Legislature, and the Board of Regents, who have been instrumental in making the present equipment possible.

D. H. Otis.



Girls' Gymnasium.

The Kansas City *Star* is making a strong effort to imitate the Kansas City *Journal* at "advertising" the Kansas State Agricultural College and its Experiment Station. The latter paper used to gravely discuss the life history and awful ravages of the cinder beetle; the *Star* has of late devoted a good deal of its valuable space to discrtations of the merits of the dogwood and the gopher tree available for timber planting in western Kansas. What next?

THE INDUSTRIALIST.

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College.

Dome F R	Nichols Editor-in-Chief
PROF. J. D	WALTERS Local Editor
PROF. J. T	. WILLARD Alumni Editor

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LOCAL NOTES.

The class of '03 are wearing a neat and artistic lapel button ornamented with a class monogram in class colors—red and white.

The baseball game at the athletic park last Saturday afternoon, between the seniors and Faculty, resulted in a victory for the former. The score stood 20 to 12.

President and Mrs. Nichols will give a reception to the members of the Board, Faculty, alumni and invited guests on Commencement night, at Hotel Gillett.

Student G. C. Miller got news from home on Saturday of flood week that the high water had destroyed everything on their farm, except a few cattle and horses.

The "cut" of the new boarding hall of the Fort Hays Branch Experiment Station is from a regular class drawing in linear perspective by third-year student W. F. Wheeler.

The society Commencement lecture to invited guests, in the College chapel on Saturday night, was delivered to a full house by Prof. A. M. Newens, of the Iowa State Agricultural College. Professor Newens is an entertaining speaker.

Just before the great flood Professor Willard had perfected arrangements with Prof. E. C. Franklin, of the University of Kansas, to deliver a lecture on liquid air, in the College chapel. The rains made a postponement necessary, and as the second date had no better luck than the first, the College lost an excellent opportuity to hear the distinguished chemist of the University on one of the most interesting subjects known to physical science.

We draw the attention of our visitors during Commencement week to the exhibits of student work in the different departments. The Department of Industrial Art has arranged an exhibit of several hundred drawings in the drafting room, on the second floor of the main building. The different sections of the Mechanical Department have many interesting specimens of student work on exhibition in the shops. The biological departments have some very fine student collections to show, and the Domestic Art Department makes its usual annual exhibition of sewing and dress-making work. The Industrialist, Students' Herald, Jayhawker, programs, etc., is the result of student work in the Printing Department. Every room will be thrown open to the public and all will be welcome to see these exhibits.

The students seemed much relieved one morning last week when a certain professor read the eighth chapter of Genesis, in which it is promised that the earth will not be destroyed again by water.—Students' Herald.

The front cover page of this issue is from a clay mold made by Miss Hetty G. Evans, instructor in the Industrial Art Department. It is the result of much work and worry. The mold was photographed by Doctor Orr, and from the photo the half-tone was made.



A Cozy Corner on the Campus.

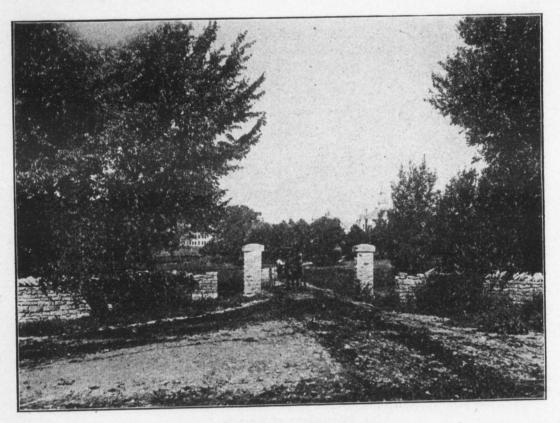
Supt. J. G. Haney, of the Fort Hays Branch Experiment Station, is furnishing a weekly news column of Station items for the Hays *Free Press*. We shall take the pleasure of culling the most interesting paragraphs for the INDUSTRIALIST.

Professor Walters will deliver a lecture on "Ornamental Arrangement and Planting of the Home Lot," at the Ottawa Chautauqua, on their farmers' day, July 8. Prof. P. G. Holden, of Iowa Agricultural College, will lecture on "Soil Fertility" and "Improvement of Corn," and there will be a general discussion on "Beautiful Highways and Byways."

Miss Nettie Wayland, third year student in the Domestic Science Department, has been engaged by the management of the Colorado Chautauqua Summer School, at Boulder, to give a course of cooking demonstrations illustrative of a course of lectures which will be given by the professor of domestic economy of Colorado Agricultural College. The Summer School will begin on July 4 and last six weeks.

The C. R. I. & P. Ry. has made a summer rate for teachers to Chicago of one fare plus two dollars for the round trip, making the fare from here \$17.55. Tickets on sale June 14, 15 and 30 and July 1; good returning till September 15.

The College orchard on Moehlman's bottom south of the city—the so called Spohr place—has suffered quite seriously from the hail storm and the flood. Several deep channels have been cut through the bottom and a large number of trees uprooted and floated away.

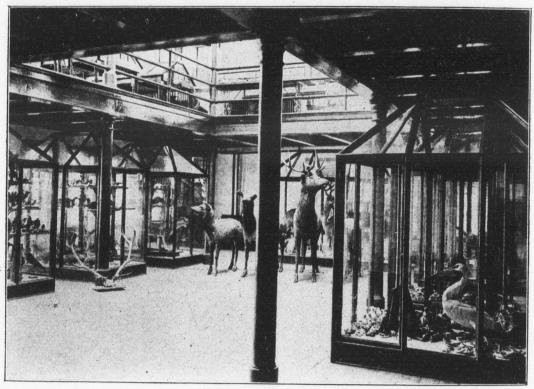


Main Entrance to College Grounds.

Prof. Edith A McIntyre, for the past two years the head of the Department of Domestic Science, has resigned her position and left for her home in Coventryville, N. Y., to take care of her father, whose health is rapidly declining. Miss McIntyre leaves many friends in Manhattan who wish her success.

President and Mrs. Nichols gave a reception at their residence to the graduating class Monday night. They were assisted in entertaining by Miss Josephine Harper, Miss Hetty G. Evans, Professor and Mrs. McFarland, Doctor and Mrs. Mayo and Prof. C. M. Brink. The rooms were decorated in red and white roses and carnations, the colors of the class. The color scheme was also carried out in the dainty refreshments. Each guest was presented with a K. S. A. C. pin as a souvenier of the occasion, which will be remembered as one of the most pleasant of their College days. The first entertainment of this class was a Hallow'een party given four years ago by President and Mrs. Nichols.

Professor Eyer has made arrangements with the Western Electrical Company, to employ graduates of the Electrical Engineering Course of this College, in their factory at Chicago, Ill. The Western Electrical Company is one of the three largest concerns in America. It has lately added about one and one half million dollars to its machinery and equipment and wishes to attract young electricians who have graduated from high grade electrical engineering courses, and offer them good wages and every opportunity to advance. Geo. Fielding and Alexis Reed, of the present senior class, expect to take up work there about July 15.



First Floor of Museum.

Under the heading "A New Job for the Agricultural Colleges," the Breeders' Gazette asks that the land grant colleges pay more attention to farm engineering. To this request the Kansas Farmer, in its last issue, says: "The above is quoted from the Breeders' Gazette, and we publish it because it is valuable matter and because it is true; but at the same time we wish we had an opportunity to show the Gazette man who wrote this article the magnificent plant and the excellent work being done with it along these lines at the State Agricultural College of Kansas. We doubt if there is another institution of the kind in the United States that has so fine an equipment in its mechanical departments as the Kansas institution, and we have never seen a commercial plant that would approximate it. We hope the article published by the Gazette and the examples set by the Kansas College may result in the other institutions of the same class taking up this very important work and pushing it forward to its utmost possibilities."

The Marysville News promises the Agricultural College a visit from the teachers of Marshall county. It says: "Arrangements are being made for an excursion from Marysville to Manhattan some time during the teachers' institute next month. It will give an opportunity for teachers and farmers to visit the Agricultural College and experimental farm. The railroad fare will be very low." We hope that the weather and the railroad company will be kind to our friends from the north. We know that we can promise them a warm reception at the College and in the city. "The latch string hangs out."



Library Book Room.

ALUMNI AND FORMER STUDENTS.

E. B. Patten, '98, was married June 3, to Edith M. Cleveland, of Carthage, S. D.

Frank Shelton, '99, is visiting friends in town during the Commencement season. He is a traveling salesman for a firm of manufacturers of fine furniture, Jamestown, N. Y., but counts Grand Rapids, Mich., as his residence.

The friends of Lieut. R. B. Mitchell, '99, and that means all who know him, will be glad to learn that he has successfully passed a searching and highly technical examination for promotion in the artillery corps. As he is now the senior second lieutenant, he will receive promotion soon. He says that "the path of the artilleryman is strewn more with books than with roses, and it is fortunate that I learned how to study during College days."

Mr. and Mrs. W. H. Moore, '94 and '96, are the parents of a little girl, born June 6, 1903.

G. H. Failyer, '77, professor of chemistry here, 1878 to 1897, and now a chemist in the bureau of soils, of the department of agriculture, is spending his vacation at home, reaching here in time to be present at the graduation of his daughters, Corinne and Maude.



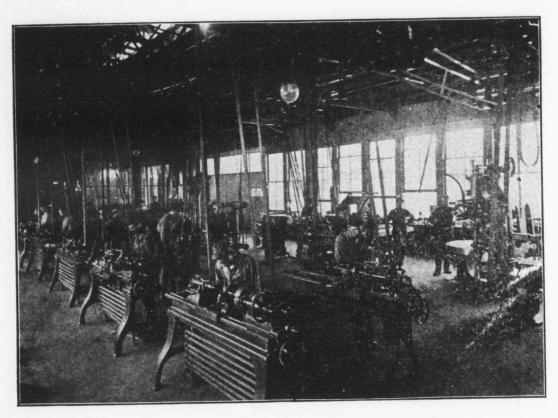
Interior of Blacksmith Shop.

The marriage of Fred Jolly ['95], formerly of Manhattan, but now of Olathe, to Miss Esther Chamberlain, of Topeka, takes place at the home of the bride this evening [June 10], at 8 o'clock. Mr. and Mrs. S. H. Jolly, Miss Georgia and Mrs. Duwee went down to-day to be in attendance at the wedding.—*Mercury*.

- J. M. Westgate, '97, writes to Professor Walters, "My appointment with the bureau of plant industry as scientific assistant dates from June 3. Sand dune fixation and the development of grasses for wet soils is my principal work." We congratulate our young friend and predict for him the success which he deserves.
- O. I. Purdy, '99, reporter on the *Daily American*, of El Reno, Okla., was married June 3, 1903, to Miss Pearl Kimmell, of El Reno. The young people threw a radiance of romance about the important event by eloping and having the wedding ceremony performed in Wichita, Kan., although the newspaper accounts do not disclose any necessity for such procedure.

M. F. Leasure, '77, recently delivered the Commencement address at the College at Lamar, Mo. It was highly commended. Mr. Leasure is a prominent attorney at La Cygne, Kan.

Fred Fockele, '01, now cashier of the Gridley State Bank, will become the cashier of the First National Bank of Waverly at an early date. This promotion is a recognition of Mr. Fockele's ability.



Interior of Machine Shop.

S. W. Williston, '72, professor of paleontology in the University of Chicago, will deliver an address on the 22nd. instant at a public meeting of the society of Sigma Xi at the Ohio State University, as part of its commencement exercises. Doctor Williston is president of the society.

C. A. Gingery, '02, after a year's successful employment by the Shade Produce Commission Company, has made a six-year contract with the company on very favorable terms. The company owns six hundred acres of fine bottom-land near Caldwell, Cowley county, and raises Percheron horses and Polled Angus cattle as specialties.

The marriage of Charles Henry Hoop ['97] to Miss Myrtle Maud Nicodemus took place at the home of the bride's parents, Mr. and Mrs. Ed. Nicodemus, corner of Third and Houston streets, Sunday, June 7, 1903, Dr. Jno. Hood officiating. This young couple have long been residents of Manhattan and are well and favorably known.—Mercury.

KANSAS STATE AGRICULTURAL COLLEGE

FIVE FOUR-YEAR COURSES OF STUDY

Each leading to the degree of Bachelor of Science, are as follows:

- 1. Agriculture.
 - 2. Domestic Science.
 - 3. Mechanical Engineering.
 - 4. Electrical Engineering.
 5. General Science.

This Institution is supported by the general government and by the Sta Kansas, and is designed, by its instruction, to promote the Historical actical education of the industrial classes in the several Society taught each term, and

All Common-school Branch taught each term, and nearly all the first- and second-year subjects, so that it is possible for one to get nearly all subjects of the first two years by attendance during winter terms only.

FOUR SHORT COURSES

Open to students of mature age who cannot, for lack of time or money, take one of the four-year courses.

- 1. Apprentice, Shops, Printing, Dairying, 80 weeks.
- 2. Domestic Science, two fall terms of twelve weeks each.
- 3. Dairying, one winter term of twelve weeks.
- 4. Agriculture, two winter terms of twelve weeks each.

College Classes are open to both sexes. Tuition is free. An incidental fee of \$3 per term is charged all students from Kansas. There is no charge for laboratory supplies. Room and board can be had at very reasonable rates. The yearly expenses, exclusive of clothing and traveling, are between \$100 and \$200. All College laboratories, shops and classrooms are well supplied with needful apparatus and appliances. A preparatory department is maintained for persons over eighteen who cannot pass the common-school branches.

FOR eatalogue or other information, address

Pres. E. R. Nichols, - - Manhattan, Kan.

VOLUME 29.

NUMBER 34.

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THE INDUSTRIALIST.

VOL. 29.

MANHATTAN, KAN., JULY 3, 1903.

No. 34

THE COMMENCEMENT OF 1903.

A NOTHER Commencement is over and the College year 1902-'03 is a thing of the past. The weather during the week was favorable and that of Commencement day proper was ideal. The attendance of interested visitors, owing to the flood ravages in the valley of the Kaw and its tributaries, was not as large as it was last year, but the different exercises of the week were well attended. The campus, with its green lawns, shady walks, groups of evergreens, and graveled roads, never looked prettier, and there never has been a class of graduates who appeared better and brighter and more hopeful than did the class of 1903.

The following pages contain a brief report of the exercises, lectures and festivities of the closing week. We should have liked to add many items of interest or say more about the rich literary treats enjoyed by the participants, but our friends will remember that the limited capacity of the Industrialist does not permit the publishing of lengthy excerpts. Much of the reported matter has been culled from the Manhattan papers, which, like the citizens, take much interest in our Commencement doings and vie with each other to make the most of the closing week of the College year.

FACULTY SENIOR BASEBALL GAME.

The first Commencement event was the annual baseball game between the Faculty and the seniors, which took place on Saturday afternoon at the athletic park. The game had no place on the official program and is not advertised beforehand, but tradition has made it an inseparable component of the last week of the parting senior—the olympic game of the four-years' course. The arena is always filled with merry spectators and the general interest reaches high-water mark. This year the game was an unusually exciting one and the score stood twenty to twelve in favor of the seniors.

SOCIETY LECTURE.

The society Commencement lecture to invited guests was given in the College chapel, Saturday evening, by Prof. A. M. Newens, of Iowa State College, at Ames. His subject was a review of Mrs. Phelps-Ward's "A Singular Life," and was listened to with much interest by a large audience.

BACCALAUREATE SERMON.

The baccalaureate sermon was delivered on Sunday afternoon, June 14, in the College chapel, by Rev. O. B. Thurston, pastor of the First Congregational church, of Manhattan. Reverend Thurston is an interesting pulpit orator and his sermon to the graduates was one of the best ever delivered to a class. It was highly appreciated by the students and the audience, who filled every inch of the chapel. The text of his discourse was taken from Proverbs 29:18: "Where there is no vision, the people perish," and the Reverend said in part:

"Man talks to God; that is prayer. God talks with man; that is inspiration. The philosophy that there is no vision takes all the glory out of life. You are not a machine; you control or should control a thing which is called the body, a thing which is called the mind. If every one did the best he knew, most of the problems of human life would be settled. If each did the best he knew, he would be on the highway to greater knowledge and therefore still better action. It does not matter if the greatest thing for you to do be not in itself great; the best preparation for greatness comes in doing faithfully the little things that lie nearest.

"Great indeed has been the influence of war, politics, commerce, law, science, and government, yet we must confess the man of vision has been one of the greatest forces of social progress. Be the reasons what they may, the prophets of yesterday are the leaders of to-day.

"Great thoughts make great thinkers; orators do not discuss petty themes. India's need made a Burke wax eloquent; paradise lent beauty to Dante and strength to Milton; and the Madona lent lovliness to the brush of a Raphael.

"We go out from one school into the great world school in which are pleasures innumerable and contentions hard. We wonder what it contains for us. President Draper says: 'The world sets up different standards of success, but by no one of them will we

succeed in equal measure.' From the world's experience, some of us exert a greater influence and gain a richer share of the world's esteem than others, but no one can tell which they will be.

"Success does not impose itself upon anyone; he who wins must strive. That life is the highest, reaches the farthest and accomplishes the most which obeys the laws of the Almighty and stands in harmonious relation with the universal plan. 'Tis not in mortals to command success: but we'll do more, we'll deserve,' says Addison.

"This century will not ask where you come from or what you know, but what can you do? No man stands alone in life. You are not a Robinson Crusoe on an island. You can't step to one side and say, I've nothing to do with this.

"When men have noble ideals, in spite of mistakes they make substantial progress. There is no attainment of the ideal except by successful dealing with the real. Men who succeed are never dreamers; never wait for something to turn up; never wait for a better time. The life that accomplishes is the one that has ideals, sees with what eyes it has, exercises the judgment it possesses, and then plunges into action. And the life that accomplishes the most is the one that has the noblest ideals, is trained to the greatest accuteness of vision, has the greatest courage, and above all is able to keep these endowments in equilibrium.

"Longing is God's fresh heavenward will
With our poor earthward striving;
We quence it that we may be still
Content with merely living.
But, would we learn that heart's full scope
Which we are hourly wronging,
Our limbs must climb from hope to hope
And realize our longing.

"Such a one like Longfellow's Casper will carve beautiful things out of fagots. In all hard conditions the possibilities of noble achievements await those who have faith and courage to do. It pays to follow one's best light. Successful life is chiefly the attempt to translate one's vision into one's work, or to make the work of one's hand represent and express the ideals of one's soul.

"A plant follows, in all its development from seed to flower, the law of its highest life. The seed, the germ within the seed fructified by its pollen, begins its career; a sprout appears; step by step it puts forth leaves and stems until at last it stands in all

its beauty. So the bird, like the flower, develops from the germ the egg enfolds. Flower and bird, from seed or egg, follow their highest and only law. Now turn to human life. It must find the law of its highest life and then follow it and give it full scope intelligently and without fear.

"An aimless life is one on which the devil holds a first mortgage. Do not err in choice. Many a man hammers the sacred desk who was called to sit in a pew; many a one frets over tools who lacks the education for a lawyer; many a man flourishes a surgeon's lancet because he missed the wood-saw. Wishing and determining are not synonomous. The question is not how to make a brilliant career, but how can I do my best.

"Another thing that makes a man is self-control. When voice, feet and hands are uncontrolled, they are bars that keep you out of many a desired field, no matter what your endowments are. If you are not master of body and mind, you fail. Endowments untrained, uncontrolled, unguarded are of no more value than speed to a horse that never knew harness. Not what the world demands, but your ability to control is what counts.

"Too low they build who build beneath the stars. This is a discovery. Do not miss it. The discovery of man to himself must lead to a full development of himself. You have not been learning to do, rather training yourself that you may be able to do. Education does not depend upon so much scholarship and so much study, but upon the use you make of it in life itself. In this endeavor, get close to leaders in business as well as books. Graduation is a step from a school of information and habit of investigation into a school of practical experience. Earnestness here will know no defeat. It will grasp each opportunity and struggle toward its own hopes always.

"What does the Master ask of any man to-day? What do we ask ourselves as we sit together this afternoon? Jesus looked and saw an eager desire for a living faith; looked, and was stirred to a mighty hope for men; looked, and gave himself to the service of souls. He says to you, take up your own responsibility and your own cross and follow me. Troubles you will have to bear and apparent failure; but this is your happiness—the greatest happiness—that you are living in the line of God's work with the present age; a discerner of the signs of His times, you not only see but feel this vision in your inmost life. This power of vision

is like a mighty river sweeping through the world. Shall we not launch our lives into its channels; give ourselves to its deeper and broader flow toward the larger privilege of the future, ever steadily on until this river of vision finds at last the eternal sea?"

CLASS-DAY EXERCISES.

Aside from the Commencement day program proper, the senior class-day exercises are the most looked forward too. This program is usually kept a secret till the invitations are issued to invited guests, and the class has a pleasant surprise in store. The bill Tuesday night was the old familiar drama, "Hazel Kirke," and was acted in a manner that did credit to all who took part. The Manhattan opera-house was crowded, and all who were present have nothing but praise for the players.

The play deals with modern romance. Thousands of people have read and enjoyed the story of "Hazel Kirke," but those who saw it Tuesday night were given a splendid opportunity of seeing it in its best dramatic form. It leads one through the lights and shadows of life, the ultimate destination of peace and happiness. There is a wonderful range of pathos, humor and dramatic effect throughout, and each character vividly portrayed the parts.

The following was the cast of characters of the play:

Hazel Kirke	Maude Failyer
Dolly Dutton	Clara GoodFich
Emily Carringford (Lady Travers)	Alberta volles
Marcy Kirke	Corinne ranger
Clara a maid	Emma Smith
Anthun Carringford (Lord Travers)	Russell Oakley
Denston Kinko	Leon v. white
A amon Dodnov	Lewis D. Edwards
Dittagua Croon	Inchara F. Dourse
Mathagolah Microine (called Met)	James W. Fictor
Deman O'Flynn	James A. Correir
Too a millon	John A. Thompson
Dan, a miller	Ivan L. Nixon

ALUMNI BUSINESS MEETING.

Wednesday afternoon the Alumni Association held a business meeting in College chapel. The following officers were elected for another year: Prof. Albert Dickens, '93, president; Mrs. J. L. Coons, '82, vice-president; Miss Elizabeth Agnew, '00, secretary; J. C. Christensen, '94, treasurer. The advisability of placing a \$5000 pipe organ in the new auditorium in memory of the deceased presidents of the College was discussed.

ALUMNI REUNION.

The regular alumni reunion occurs triennially, and this being an off year there was no special effort made to make it a great gathering. Nevertheless there were a large number of alumni present from abroad, as well as from the vicinity, and these, together with the members of the Faculty, the Board and many invited guests, had a very pleasant gathering in the Girls' Gymnasium on Wednesday night. A musical program was rendered and the College songs were sung by all present. Refreshments were served during the evening, and all left feeling that "there is a tie that binds."

COMMENCEMENT EXERCISES.

At 10 o'clock Thursday morning the chapel was crowded for the Commencement exercises. The graduates, the Faculty and the Board of Regents filed in and took their places on the platform. After the selection "Andante," by the orchestra, prayer was offered. The President made the usual announcements, which was followed by a cornet solo by R. H. Brown, with orchestra accompaniment.

President Nichols then introduced Rev. Thomas E. Green, pastor of Grace Episcopal church, of Cedar Rapids, Iowa, who delivered the annual address. The lecture had for its subject "The Key to the Twentieth Century," and was delivered in a masterly manner. The speaker, who is a well-known platform orator, dealt with the marvelous possibilities of future invention, discovery, and the accumulation of wealth, but he showed also that with all these positive factors there would be difficulties of a social or political nature to overcome that would tax the ingenuity and integrity of the nation and that only proper common-sense education and high-grade manhood and womanhood can counteract these dangers. The lecture, though bristling with statistics from start to end, was unusually interesting from this very fact, and many of its eloquent passages and surprising statements were applauded.

After the address the Bluemont Quartet sang the College song, "Alma Mater," composed by W. H. Jones, '88.

CLASS OF NINETEEN HUNDRED THREE.

President Nichols in a brief speech presented the diplomas to the '03 class. The following is the class roll, together with their theses subjects: Richard Franklin Bourne,
A Comparative Study of the Dentition of
Some Common Mammals.

Howard McCune Chandler, Indicator Reducing Motions.

De Verne Corbin,
Tests on the Effect of Shape on the
Strength of Castings.

James A. Correll, Tests of a Small Compressed Air Plant.

Amos Luther Cottrell, The Art of Steer Feeding.

Claude Carrol Cunningham, Comfort as a Factor in Stock Raising.

Orrin Pomeroy Drake, Tests of a Small Compressed Air Plant.

Louis Sidney Edwards, The Production of Sanitary Milk.

Robert Alexander Esdon, College Ethics.

Corinne Failyer,
Generic Characters in the Chrysomelidae.

Maude Irene Failyer, Spectrometry.

Estella May Fearon, The National and Linguistic Elements of the English Language.

George T. Fielding, Regulating and Testing of Wattmeters.

James William Fields, Selection, Care and Feeding of the Brood Sow.

Arthur B. Gahan,
Modifications Adaptive to an Aquatic
Habit in the Coleoptera.

Fred Norton Gillis, The Sugar-Beet Industry.

Clara S. Goodrich,
The School Systems of Germany and the
United States: A Comparison.

Edith Anna Goodwin, The Necessity of Pure Water Supply.

Ellsworth Paul Goodyear,
A Comparative Test of Hand Cream Separators.

Alanson L. Hallsted, Good Roads and Good Streets Beautified.

Esther E. Hanson, The Unity of the Senses.

Edward Howard Hodgson, Soil Moisture Studies.

Pearl Holderman,
The Subconscious Idea.

Hartley Bowen Holroyd, Forestry.

Sarah C. Hougham,
Relation of American Literature to
American Nationality.

Axel H. Johnson,
Tests to Determine the Effect of Reversed Stresses on the Elastic Limit and Ultimate Strength of Medium Steel.

Jesse McCullah Jones, Calf Management. Hernon Curtis Kyle, External Parasitic Diseases of Domestic Animals.

Raymond George Lawry,
Tests to Determine the Effect of Reversed Stresses on the Elastic Limit and
Ultimate Strength of Medium Steel.

Rose Margaret McCoy, The Mental Unfoldment of the Child.

Edwin William McCrone, A Test of Hand Separators.

Bessie A. Mudge, The Vital Touch.

Harold Theodore Nielsen, Soil Moisture Studies.

Ivan L. Nixon,
Variations in the Mouth parts of some
Hymenoptera.

Russell Arthur Oakley, Grass Gardens of the Great Plains Region; their Management and some Important Constituents.

Anna Louella O'Daniel,
The Cultivation of the Aesthetic Emotions.

Clara Pancake, The Administration of Louis XVI.

Celoa Alice Perry,
Progress of Music from the Early Ages
to the Present Time.

Alexis Joseph Reed, Regulating and Testing of Wattmeters.

Earl Nathaniel Rodell, The Evolution of Printing.

Alice May Ross, Suggestion.

Alfred Hayes Sanderson, Crop Rotation.

Henry August Sidorfsky, The Alternating Current Dynamo.

Emma Estella Smith, Evolution of the Home.

Harold Addison Spilman, Municipal Government in Great Britain.

Lois Stump,
The Psychology of Suggestion.

Harry Raymond Thatcher, The Principles of Stock Breeding.

Helen B. Thompson, The Missouri Compromise.

John Augustus Thompson, Protective Coloration of Animals.

Sarah Pauline Thompson, Woman as an Executive Member of Society.

Dovie May Ulrich, Wordsworth as an Interpreter of Nature.

Alberta Suena Voiles, History of Diplomatic Relations of United States to Cuba.

Leon Vincent White,
Tests on the Effect of Shape on the
Strength of Castings.

At the close of the ceremony L. S. Edwards, of the graduating class, arose, stepped forward and deposited on the pulpit a very handsome leather bound Bible, and in a few well chosen remarks presented it to the College for use in the morning chapel exercises and as a memento of the general esteem of the class for President Nichols and his collaborators.

CAMPUS CONCERT.

At two o'clock P.M. the cadet band, under the direction of Leader R. H. Brown, presented the following open air program to a large audience on the campus east of Fairchild Hall:

March (new), "Dixie Girl"										. Lampe
Overture, "Poet and Peasant"										. Suppe
Waltz, "Hearts Courageous".										. Blanke
Selection, "Sky Pilot"										Laurens
Dance (Spanish) "La Paloma"										Yradier
March, "Kansas City Spirit".									5	Sorrentino

STOCK PARADE.

Immediately after the concert the band left for Agricultural Hall to head the stock parade, which was approaching from the barns. There were about a dozen fine Percheron horses and forty-seven head of pure bred cattle in the procession. Every animal was being led by a student of the agricultural course. The line was fully one quarter of a mile in length and the exhibit was one of the distinctly agricultural features of the institution—a feature that few states in the world could imitate.

MILITARY DRILL.

At 3 P.M. the cadet battalion appeared upon the campus in front of the main building and gave an exhibition review, followed by a sham battle. This part of the annual program is the delight of the old veterans as well as of the school lads and lassies. It is the punctum finalis of Commencement week, in which the public takes much interest, and the cadets satisfy this general interest with the war noise of a battle as between two contesting armies. The cannons boom, the musketry rattle, the bugles blare and the officers shout as if San Juan Hill was to be acted over again. But after the final rush of the victorious companies peace is established and the arms are deposited in the armory for the summer vacation.

THE PRESIDENT'S RECEPTION.

On Commencement evening President and Mrs. Nichols received at the Gillett Hotel, and the occasion was thoroughly en-

joyed. The members of the Board, the Faculty, the alumni and the graduating class, together with many of their friends and many of the visitors, in all about three hundred guests, were invited. There are, perhaps, too few opportunities for the College and town people to become acquainted. Certainly, an occasion like that of Thursday demonstrates the pleasureableness of such an intermingling. The Misses Hofer sang a duet, and the College song was given by members of the graduating class. Punch was served by Misses Ruth Mudge, Helen Knostman, and Olivia Staatz.

COMMENCEMENT SESSION OF THE BOARD OF REGENTS.

The Board of Regents were in session Wednesday afternoon and confirmed the recommendation of the Faculty conferring the degree of B.S. upon fifty three candidates who were graduated on Thursday. Friday and Saturday the regular business sessions were held.

The work of filling vacancies in the Faculty resulted as follows: R. R. Price was elected to the chair of history and economics, filling the vacancy caused by the resignation of Prof. C. E. Goodell. Professor Price is a graduate from Baker and Kansas Univer-He also did advanced work in some of the largest institutions in the East. Prof. O. Erf was elected professor of dairying to fill the vacancy caused by the resignation of E. H. Webster. Professor Erf is said to be one of the strongest men available in the United States. Mrs. Henrietta Calvin, former librarian, was elected professor in domestic science, to fill the vacancy caused by the resignation of Miss Edith A. McIntyre. Miss Margaret Minis was elected librarian, and Miss Tinkey, assistant librarian. Miss Josephine Harper was granted a leave of absence for one year and O. H. Halstead, of St. Joseph, Mo., takes her place as assistant professor of mathematics. Miss Jessie Shaw, of Topeka, was elected assistant in mathematics. E. N. Rodell, of this year's graduating class, was elected assistant in the Printing Department. Prof. D. E. Lantz was reëlected special agent and official State prairie-dog and pocket-gopher exterminator.

The drawings and specifications for the new dairy building and the auditorium were examined and adopted and the President was instructed to advertise for bids, the contracts to be awarded by the building committee on July 8, 1903.

The Board fixed the salaries of the Faculty and assistants, and

increased them about ten per cent, for the next school year. The following is a statement of the salaries of the employees, as fixed for the year 1903 '04, together with the appropriations for the running expenses of the different departments:

	Salary.	Exp.		Salary.	Exp.
Executive		\$5500	Music Professor Brown Assistant Brown Assistant Harris	1650 700 700	650
Clerk Knostman Priv. Secy. Hughes Janitor Lewis	420 600 750	3000	English	1650 1100 750	25
Professor Ten Eyck Assistant Shoesmith	2100 800	3000	Assistant Hopps Mathematics Professor Remick	1650	125
Animal Husbandry Professor Otis Assistant ———	1650*	5000	Asst. Prof. Halstead Assistant Anderson Assistant Shaw	1650 1000 750 600	
Botany. Professor Roberts Assistant — Clerk Mudge	1800 400	550	Physics	1650 1200	1650
Chemistry	2000 1550	2000	History and Economics Professor Price	1500	10
Assistant Shaw	1000 800		Philosophy Professor McKeever	1650	75
Clerk Melton Dairying Professor Erf	540 1350	1250	Domestic Science Professor Calvin Assistant ——— Assistant ———	1500	1000
Entomology and Zoölogy Professor Popenoe Assistant Dean Assistant Scheffer	2000 900 800	920	Domestic Art Superintendent Jones Assistant Cowles Assistant Coe	900 480 420	175
Horticulture Professor Dickens Assistant Greene Foreman Baxter	1650 900 750	2065	Printing Supt. Rickman Assistant Rodell	1300	600
Veterinary Professor Mayo Asst. Prof. Barnes	2000 1300	620	Preparatory Principal McFarland Assistant Holroyd Assistant Short	1300 600 600	25
Mechanical Engineering Professor McCormick, Asst. Professor Paul. Foreman House Foreman Wabnitz	2000 1050 1000 1000	2280	Assistant Thompson	1000 720 600	300
Foreman Ridenour	750		Heat and Power Superintendent Lund Assistant ———	1350	1200
Professor Walters Assistant Evans	1650 800	250	Military Professor Rowan		180
Assistant Weeks	600		Ft. Hays Branch Exp. Sta. Superintendent Haney, Foreman Elling	1500 600	,

After considering many details of the business of the College the Board adjourned to meet in regular session on call of the President of the Board.

WHAT SHALL BE DONE WITH THE SANDED AREAS?

THE flood has worked serious changes in the valley of the Kansas and other rivers. Leaving out of consideration the losses due to shiftings of the channel, another effect, less striking but in the aggregate more damaging, consists in the covering of extensive areas with sand. To those remote from the region, the origin of so much sand may be mysterious; to those on the ground it is clear enough. For all of the areas so covered, there are corresponding areas that have been denuded or excavated. The excavations vary from a few feet in diameter and depth to many acres in area washed out to a depth of thirty or forty feet. These are deeper than the wells of the vicinity, and will remain as permanent lakes. The beginning of these excavations seems to have been due to the presence of something that caused a waterfall; it may have been but a few inches in height, or it may have been several feet. Hedges against which cornstalks had lodged acted as dams and produced this effect. The falling water drilled a hole in the soil; the flowing water carried away the loosened material, and under favorable conditions a considerable depth was attained. Where the subsoil was sandy it washed out easier and undermined the surface, thus accelerating the work of destruction. The sand, fine earth, organic matter, driftwood that may have been buried for centuries, coarse gravel from abandoned creek beds, and whatever else may have been there, started down stream.

The distance that the several kinds of material were carried depended on their specific gravity and on the depth and velocity of the water. A sorting of it thus ensued. The gravel was dropped first, the coarse sand next, then finer and finer, the very finest particles being carried on to the delta of the Mississippi. The effect on lands is thus very diverse. In the extreme cases, instead of land worth fifty to one hundred dollars an acre a lake is left of questionable value. In others a field may be nearly ruined by dozens of holes dotted over it. Adjacent to these excavations we have the deposits of gravel and coarse sand. These and the other deposits are not evenly spread, but drifted in bars, like

snow-drifts, to the down-hill side of obstructions. They vary in depth from a few inches to several feet. Farther along, where the finer parts are deposited, sufficient soil may be included to make land suitable for sweet potatoes; still farther on a fine mud of great fertility is found. In any given bend of the river, other things being equal, the tendency is to injure the upper parts worse, the lands receiving the mud being positively benefited, while those getting the coarse sand and gravel are injured most.

In studying the possible ways of utilizing these sanded areas two factors must be taken into consideration, *i. e.*, the character of the original soil and the depth and composition of the deposit. If the soil was sandy and poor, and a layer of nearly pure sand was laid over it, injury must be the result, the degree of which depends on the depth of the sand. A few inches of sand on such land may be regarded as nearly ruining it. The best treatment of such cases is not within the scope of the present article.

Where the original soil was very heavy, a light deposit of sand, when plowed in, may even be an improvement. Such cases in the river bottoms are probably not common, however; for the most part the addition of the sand must be regarded as a greater or less injury, which is to be minimized to the greatest extent possible. Where the sand is shallow enough to allow its incorporation with the soil by deep plowing, the condition is as favorable as could be expected, and with a few years of careful treatment the soil can be used for ordinary farm crops as before. To go to the other extreme, there are areas of good soil covered so deep in sand that no system of tillage can reach it. Such land is ruined for any immediate use. With the lapse of years, the soil-making processes of nature, assisted by man, will to a certain extent redeem it, but it will always be poor land.

But in addition to the two extremes just referred to, there are large areas covered say from five to fifteen inches deep; not so deep as to make the case hopeless, but too deep to allow one to expect to ameliorate the condition to such an extent as to make the land available for general farming. The main purpose of this article is to present a suggestion in respect to the utilization of such land. It would seem that the conditions dictate the establishment, if possible, of some permanent deep-rooting crop. Possibly an orchard or forest plantation may be best in some in-

stances, but to the writer it seems of more general usefulness to suggest seeding the land to alfalfa. This suggestion, it must be understood, is supposed to be applicable only to such sanded areas as are underlaid by deep, rich soil. To establish the alfalfa it will be necessary to bring up at least enough of the good soil to the surface to form a seedbed—the more the better. When once started, the roots of the young plants will go down through the sand into the soil below, and to the indefinite distance therein for which alfalfa roots are famous. The entire fertility of the land will thus be practically as completely available as before the flood. The applicability of this plan is limited only by conditions that will prevent the preparation of a seedbed. Where the sand is deep, as deep a furrow as possible may be turned, and then a second one be brought up from the bottom of the first. If in this way a certain amount of good soil can be brought to the surface, there is no reason why success should not be attained.

In the more extreme cases it may be necessary to give the soil one or more years of preliminary cropping to plants that can be grown on sandy land, such as sorghum, sand vetches, or cowpeas, turning the crop under to a shallow depth and thus incorporating organic matter that will modify the texture and composition of the surface so as to enable the alfalfa to start.

The cultivation of alfalfa on such land need not be looked upon as the only crop that can ever be grown there. As the years go by earthworms, gophers and other animals will gradually bring up the soil to the surface. The alfalfa roots will fill the sandy as well as other portions, and bring up mineral matter from the depths below. The leaves falling will deposit this at the surface. By these and other means the upper portion of the new soil will become so modified that it can be used for general cropping, after breaking up the alfalfa sod. The length of time required will evidently depend very much upon the depth of the sand and the extent to which the underlying soil is brought up by the preparation for the alfalfa.

J. T. WILLARD.

The College shipped five cars of fat cattle to Kansas City last week. They were a handsome lot and were handled by the Mc-Intosh & Peters Commission Company. Prof. D. H. Otis, Asst. George Wheeler and Amos Cottrell went to Kansas City with the stock.

ALUMNI AND FORMER STUDENTS.

Frank A. Waugh, '91, professor of horticulture in the Massachusetts Agricultural College, is spending his vacation in Europe.

Wm. Anderson, '98, assistant in mathematics, is giving another vacation to the study of higher mathematics, at the University of Chicago.

L. S. Edwards, '03, for the present will take charge of Chas. Swagler's dairy farm, near Omaha. This supplies sanitary milk to the city.

H. R. Thatcher, '03, steps from the graduation platform into the care of John B. DeMotte's herd of shorthorn cattle at Greencastle, Ind.

Ruth Mudge, '01, who has been doing clerical work in the Botanical Department for the last two years, has been formally elected as a clerk in that department.

Lorena Clemons, '94, expects to combine study with rest, business with pleasure, by going to Colorado Springs this summer and studying special features of bookkeeping at a business college.

Mr. and Mrs. John Patten [both of '95] have been entertained at dinners and teas since their arrival by Mesdames Barnett, Wharton, Cress, Brock, Lynch-Failyer and Miss Laura Day.—
Nationalist.

W. E. Mathewson, '01, assistant in chemistry, is spending the vacation in the University of Chicago studying quantitative analysis and physical chemistry. As a student Mr. Mathewson has few equals, and he will accomplish much during his stay there.

Margaret Minis, '01, who has served with conspicuous success as assistant librarian through the administration of four librarians, has received a well-merited recognition by promotion to the librarianship, where she will doubtless continue to give complete satisfaction.

Miss Ella Weeks, second year student in 1897, and since a graduate of the University of Kansas, was elected assistant in drawing. Miss Weeks has fine ability in this line, and it is expected that a portion of her time will be given to the scientific departments in drawing illustrations.

Mrs. Henrietta Willard-Calvin, '86, was elected professor of domestic science in this College at the last meeting of the Board of Regents. Mrs. Calvin is familiar with conditions as found in rural homes, understands the limitations and the possibilities of Kansas girls coming here, is well versed in the sciences upon which the manifold processes of household art depend, has a thorough practical knowledge of cooking and home management, and executive ability far beyond the usual. Her friends have no doubt that she will succeed in her new position.